

Scarce Resource Management & Crisis Standards of Care



Overview & Materials

Critical Care Algorithms | Scarce Resource Cards | Triage Team Guidelines & Worksheets



SCARCE RESOURCE MANAGEMENT and CRISIS STANDARDS OF CARE

I. INTRODUCTION

In the event of a large-scale disaster, either a no-notice event such as a natural disaster or a prolonged situation such as a pandemic, there is the potential for an overwhelming number of critically ill or injured patients. In these situations, certain medical resources may become scarce and prioritization of care may need to be considered.

Medical surge is a complex multifactorial event, the response to which is equally complex. In an effort to better understand, measure, discuss best practices and manage medical surge, it is essential to have an overall guiding framework.

In 2009, the Institute of Medicine (currently the National Academy of Medicine) published a landmark report, *Guidance for Establishing Crisis Standards of Care for Use in Disaster Situation: A Letter Report*. In this report the authors defined Crisis Standards of Care as follows:

“A substantial change in usual healthcare operations and the level of care it is possible to deliver, which is made necessary by a pervasive (e.g. pandemic influenza) or catastrophic (e.g. earthquake, hurricane) disaster. This change in the level of care delivered is justified by specific circumstances and is formally declared by a state government in recognition that crisis operations will be in effect for a sustained period. The formal declaration that crisis standards of care are in operation enables specific legal/regulatory power and protections for healthcare providers in the necessary task of allocating and using scarce medical resources and implementing alternate care facility operations.”¹

They outlined a framework for the discussion of surge capacity defining it as a continuum from conventional to contingency, and finally crisis. They defined this “Continuum of Care” as follows:

Conventional Capacity: The spaces, staff, and supplies used are consistent with daily practices within the institution. These spaces and practices are used during a major mass casualty incident that triggers activation of the facility emergency operations plan.

Contingency Capacity: The spaces, staff, and supplies used are not consistent with daily practices but provide care that is functionally equivalent to usual patient care. These spaces or practices may be used temporarily during a major mass casualty incident or on a more sustained basis during a disaster (when the demands of the incident exceed community resources).

Crisis Capacity: Adaptive spaces, staff, and supplies are not consistent with usual standards of care but provide sufficiency of care in the context of a catastrophic disaster (i.e., provide the best possible care to patients given the circumstances and resources available). Crisis capacity activation constitutes a significant adjustment to standards of care.¹

¹ IOM (Institute of Medicine). 2012 *Crisis Standards of Care: A Systems Framework for Catastrophic Disaster Response*. Washington, DC: The National Academies Press.

The National Academy of Medicine also stresses the importance of an ethically grounded system to guide decision making in crisis to ensure the most appropriate use of resources. They define these ethical principles as:

- **Fairness** – standards that are, to the highest degree possible, recognized as fair by all those affected by them – including the members of affected communities, practitioners, and provider organizations, evidence-based and responsive to specific needs of individuals and the population.
- **Duty to care** – standards are focused on the duty of healthcare professionals to care for patients in need of medical care
- **Duty to steward resources** – healthcare institutions and public health officials have a duty to steward scarce resources, reflecting the utilitarian goal of saving the greatest possible number of lives.
- **Transparency** – in design and decision making
- **Consistency** – in application across populations and among individuals regardless of their human condition (e.g. race, age disability, ethnicity, ability to pay, socioeconomic status, preexisting health conditions, social worth, perceived obstacles to treatment, past use of resources)
- **Proportionality** – public and individual requirements must be commensurate with the scale of the emergency and degree of scarce resources
- **Accountability** – if individual decisions and implementation standards, and of governments for ensuring appropriate protections and just allocation of available resources¹

This framework has been nationally accepted and adopted and has been used by King and Pierce Counties and adopted by the Washington State Department of Health Disaster Medical Advisory Committee.

I. Background:

In 2012, consistent with recommendations from the Institute of Medicine (IOM), the Northwest Healthcare Response Network developed a Disaster Clinical Advisory Committee (DCAC), a group of more than 45 clinicians from healthcare organizations across King and Pierce counties, representing more than 15 clinical subspecialties, working in coordination with Public Health – Seattle & King County and Tacoma-Pierce County Health Department. Since that time, a WA State Disaster Medical Advisory Committee (DMAC) has been developed and along with DCAC have focused on the development of clinically focused tools and planning for medical surge, including strategies for the implementation of Crisis Standards of Care.

The content of this document is based on a thorough review of the literature, guidelines published by leading national healthcare specialty colleges and societies, recommendations of the National Academy of Medicine and detailed discussion and deliberation by the WA State Disaster Medical Advisory Committee (DMAC), the Disaster Clinical Advisory Committee (DCAC) Central District and included input from both local and state Community Engagement Reports.^{2,3}

II. Contents:

All individual Scarce Resource Cards and Triage Algorithms are continually under review and open for comments as outlined below in Section D.

² 5.Li-Vollmer, M. Health Care Decisions in Disasters: Engaging the Public On Medical Service Prioritization During a Severe Influenza Pandemic. Journal of Participatory Medicine. Vol 2. December 14, 2010.

³ Washington State Crisis Standards of Care Community Engagement Report, June 2019, DOH

A. Scarce Resource Cards

The Scarce Resource Cards (SRC) are based on work done by Minnesota Public Health². They provide specific strategies which can be used in the conservation, adaptation, substitution, re-use, and re-allocation of a critical resource during an emergency. Additionally, the cards provide recommendations to be implemented in preparation as well as response thus covering the whole continuum of care (conventional, contingency, and crisis) as described above.

The content and composition between cards varies. Some cards are designed to provide specific clinical treatment strategies (e.g. Mass Casualty Burn Treatment Card). Others outline specific patient populations for which the recommendations are made (e.g. in-patient vs out-patient dialysis patients).

Scarce resource cards have been created for the following potentially limited resources:

- Behavioral Health
- Blood products
- Burn
- Hemodynamic support and IV fluids
- Mechanical ventilation
- Medication administration
- Nutritional support
- Oxygen
- Renal replacement therapy
- Respirator and General PPE
- Staffing

B. Scarce Resource Triage Algorithms and Worksheets

Adult and Pediatric Critical Care Triage Algorithms which should be used when Critical Care resources are overwhelmed. The Algorithms are designed to be used side-by-side with the respective Worksheet which provides more in-depth clinical considerations and information needed to move through each step in the Algorithm. Decisions made using these algorithms need to be managed by a Triage Team.

Guidelines for the composition, roles and responsibilities of Triage Teams and their oversight are included in the Triage Team Guidelines mentioned below.

C. Crisis Standards of Care Clinical Triage Team Guidelines

Allocation of a scarce resource is a complex task and, in order to maintain the ethical framework outlined above, it is crucial that the decision-making process be consistent and that oversight and review mechanisms be established. The Triage Team Guidelines provide institutional and regional recommendations for this process.

D. Update and Input Procedures

1. All documents contained in this packet are maintained by NWHRN.
2. Each document is reviewed every 3 years during scheduled plan review. During a specific response, it is recognized that the clinical situation may change based on numerous incident-dependent factors. Therefore, in response, documents are reviewed as outlined in the Triage Team Guidelines.
3. At any time, input is welcomed and can be discussed at the institutional level with specific institutional DCAC members (if applicable). Input can also be made directly to the Chair or Vice-Chair of the WA State DMAC or to the Senior Medical Advisor of NWHRN. A full list of local DCAC and state DMAC members and the Senior Medical Advisor is available from NWHRN.

² <http://www.health.state.mn.us/ocp/healthcare/crisis/standards.pdf>

III. Institutional Distribution

The institutional distribution of the contents of this packet will be determined by each institution's Emergency Manager, DCAC member(s), if applicable, and appropriate administration.

IV. WA State Crisis Standards of Care Guidance Framework

In any medical surge, the primary goal is to prevent or limit the time in "Crisis" (as defined above by the NAM). It is understood that movement within the continuum of care is a fluid process and can vary depending on the resource in question or the situation at hand.

It is also paramount, when faced with potential scarce resources that the response is coordinated and communications among all of healthcare is maintained to provide accurate and up-to-date situational awareness. WA State in conjunction with State DMAC, DOH, and state healthcare coalitions have developed the WA State Crisis Standards of Care Guidance Framework and is available through DOH. This document outlines regional roles and responsibilities, provide an ethical framework and other tools which will assist in coordinated planning and response.

C. Contacts:

For any questions about this document or contents of this packet please contact:

Northwest Healthcare Response Network at info@nwhrn.org.

BEHAVIORAL HEALTH – PATIENT PLANNING and RESPONSE 05-09-2019 FINAL

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

Conventional Capacity – The spaces, staff, and supplies used are consistent with daily practices within the institution. These spaces and practices are used during a major mass casualty incident that triggers activation of the facility emergency operations plan.	Contingency Capacity – The spaces, staff, and supplies used are not consistent with daily practices, but provide care to a standard that is functionally equivalent to usual patient care practices. These spaces or practices may be used temporarily during a major mass casualty incident or on a more sustained basis during a disaster (when the demands of the incident exceed community resources)	Crisis Capacity – Adaptive spaces, staff, and supplies are not consistent with usual standards of care, but provide sufficiency of care in the setting of a catastrophic disaster (i.e., provide the best possible care to patients given the circumstances and resources available). Crisis capacity activation constitutes a significant adjustment to standards of care (Hick et al, 2009).			
RECOMMENDATIONS		Strategy	Conventional	Contingency	Crisis
PLANNING General <ul style="list-style-type: none"> 1. Encourage patients to assemble and maintain a disaster kit, to include an extra month worth of their medications, in addition to food, water, sanitation, and first aid supplies, should they need to shelter in place. 2. Encourage patients to discuss planning for disruption in their care with their current healthcare providers, including primary care providers as well as behavioral health providers. 3. Encourage Behavioral Health Providers to develop a disaster plan with the patient as part of treatment planning. 		Prepare			
Gathering Resources <ul style="list-style-type: none"> 4. Encourage patients to identify tools and strategies they have found helpful in symptom relief and write down what works. Include a copy of the document in their disaster kit. 5. Encourage patients to explore other avenues for self-help, such as apps to assist with medication and symptom management, and to practice these prior to a disaster. Examples: <ul style="list-style-type: none"> 5a) Headspace (meditation and mindfulness) https://www.headspace.com 5b) Virtual Hopebox (distraction, coping exercises, relaxation) https://psyberguide.org/apps/virtual-hope-box/ 6. Encourage patients to identify family members or friends who are helpful to them and include them as part of their resources. Family resources can be found at https://www.mentalhealth.gov/talk/friends-family-members 		Prepare			
Preparing a Team <ul style="list-style-type: none"> 7. Encourage patients to reach out and identify a specific individual in their lives who can be a monitor and coach during disruptive/stressful events. 8. Family and friends should be encouraged to take advantage of training through Red Cross, National Alliance on Mental Illness (NAMI), or local community mental health clinics, to assist the patient during times of disaster. https://www.namiwa.org/index.php/programs/education-training 		Prepare			
Response <ul style="list-style-type: none"> 9. Patients should be encouraged to locate their physical resources, such as food, water, and medications. 10. Patients should reach out to their pre-identified support system (family, friends), and to their identified disaster monitor and coach. 11. Patients should retrieve any written materials and plans to assist them in monitoring and managing symptoms. 12. Patients may wish to reach out to community organizations (e.g. Red Cross, National Alliance on Mental Health and local community mental health clinics) for additional resources if available at the time of the disaster. 					

Adapted From the Minnesota Department of Health, Office of Emergency Preparedness

FINAL: May 9, 2019



BEHAVIORAL HEALTH STAFF PLANNING and RESPONSE 05/09/2019 FINAL

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

<p>Conventional Capacity – The spaces, staff, and supplies used are consistent with daily practices within the institution. These spaces and practices are used during a major mass casualty incident that triggers activation of the facility emergency operations plan.</p>	<p>Contingency Capacity – The spaces, staff, and supplies used are not consistent with daily practices, but provide care to a standard that is functionally equivalent to usual patient care practices. These spaces or practices may be used temporarily during a major mass casualty incident or on a more sustained basis during a disaster (when the demands of the incident exceed community resources)</p>	<p>Crisis Capacity – Adaptive spaces, staff, and supplies are not consistent with usual standards of care but provide sufficiency of care in the setting of a catastrophic disaster (i.e., provide the best possible care to patients given the circumstances and resources available). Crisis capacity activation constitutes a significant and adjustment to standards of care (Hick et al, 2009).</p>			
RECOMMENDATIONS		Strategy	Conventional	Contingency	Crisis
<p>GENERAL (For all clinical settings: inpatient, outpatient, group homes, specialty care facilities, ACF)</p> <ul style="list-style-type: none"> 1. Include Staff mental/behavioral health guidance/resources in all response plans and continue to maintain, test and update mental health surge plans. 2. Include Mental Health surge issues in trainings and exercises including De-escalation Training, Management of the aggressive patient and Staff Safety.^{1,2} <p>PLANNING for PATIENT Mental Health Surge</p> <ul style="list-style-type: none"> 3. Identify all staff with mental health/behavioral health training and appoint key individuals to lead and organize disaster mental health preparedness and response <ul style="list-style-type: none"> 3a) Recommend specific disaster mental health training for Behavioral Health providers currently embedded in general medical settings. These individuals will be key in providing Just-in-Time (JIT) training to others in times of mental health patient surge. 3b) Store resources and JIT disaster mental health training materials. (e.g. Health Support Team Curriculum, or Skills for Psychological Recovery National Child Traumatic Stress Network). See references below for specific material recommendations.^{3,4,5} <p>PLANNING for STAFF Mental Health needs:</p> <ul style="list-style-type: none"> 4. Encourage psychological first aid training to all medical staff especially for key clinical leaders and administrators.^{5,6} 5. Identify and train willing behavioral health and non-behavioral health providers with more comprehensive curricula than PFA, to act as monitors and evaluators for their colleagues. Utilize evidence-based questionnaires as needed to determine current staff functioning. For example, ProQOL is one quick evaluation tool (https://proqol.org) 6. Provide psycho-education for staff on caregiver fatigue, including symptoms, and coping/support tools^{4,5,7,8} 7. Teach appropriate debrief strategies recognizing^{9,10,11} <ul style="list-style-type: none"> Group debriefing may not be appropriate for all. Prepare and plan to do 1 on 1 debriefing The pace of the debrief session should be responder driven not agenda driven Individuals process traumatic situations at their own pace. Forcing graphic or stressful debriefing can cause increased trauma. <p>PLANNING FOR IN-PATIENT PSYCHIATRIC FACILITIES:</p> <ul style="list-style-type: none"> 8. Encourage inpatient psychiatric facilities to develop connections with other inpatient psychiatric facilities to develop planning for potential patient transfers, evacuations and staffing. 9. All inpatient psychiatric facilities should develop general disaster planning to include basic care for patients e.g. adequate food/water/shelter, staffing shortfalls, medications, transport of patients, methods of transport, and management of patients who may represent a danger to themselves or others. 		<p><i>Prepare</i></p> <p><i>Prepare</i></p> <p><i>Prepare</i></p> <p><i>Prepare</i></p>			

RESPONSE Patient Surge <ul style="list-style-type: none"> 10. Notify pre-trained providers to prepare for surge. Implement JIT training of other staff to help with patient surge. 11. Ensure Alternate Care Facilities have written educational materials to assist with patients, and access to mental health consultation as needed. 12. In preparation for possible loss of electronic medical records, have printed patient information to include diagnosis, allergies and current medications/dosages. 13. Modify individual treatment to shorter, symptom focused appointments. 14. Utilize psycho-educational, and brief evidence-based interventions. 15. Use Telehealth mental health providers as off-site resource. 	Substitute/ Adapt			
<ul style="list-style-type: none"> 16. Shift treatment to emphasize coping strategies, interventions to manage symptoms, and identifying and accessing personal resources. 17. Deploy multi-disciplinary response teams as needed to provide Just in Time training for healthcare providers/organizations, and to provide consultation on Behavioral Health interventions including medications and crisis management. 18. Shift from individual therapy to group intervention. 	Substitute/ Adapt			
Staff Self Care <ul style="list-style-type: none"> 19. Consider “deliberate Coping and Calming” strategies or “Personal Reflective Debrief” techniques over mandated and prescribed CISD for staff during and after traumatic events.^{9,10} 20. Encourage and support staff self-care. When possible maintain schedules, routines and shifts. 21. During an event encourage personal “pauses” for reflection and self-evaluation. 22. Encourage utilization of organizational support systems, (e.g. employee assistance program, wellness programs, etc.). 23. Maintain consistent scheduled communication between administrators and providers during and after acute event. (e.g. huddles, check-ins, sign-outs, etc) 	Substitute/ Adapt			
MEDICATIONS RECOMMENDATIONS: <ul style="list-style-type: none"> 24. Psychiatric medications may not be available due to supply chain disruptions during a major event. Encourage all facilities who care for mental health patients (outpatient, in-patient medical, long term care, group homes, or specialty care facilities) to develop psychiatric medication supply strategies. Consider increasing par levels, developing stockpiles, and/or planning with local retail pharmacies as potential psychiatric medication supply strategies. 	Prepare			

Adapted From the Minnesota Department of Health, Office of Emergency Preparedness

FINAL: May 9, 2019

¹<https://handlewithcare.com/wp-content/uploads/2010/08/hwc-mentalhealth.pdf>

²<https://www.crisisprevention.com>

³<https://learn.nctsn.org/course/index.php?categoryid=11>

⁴Contact Health Support Team directly at <http://healthsupportteam.org> for curriculum.

⁵<https://www.nctsn.org/resources/skills-psychological-recovery-spr-online>. Requires free registration for materials.

⁶<https://learn.nctsn.org/course/index.php?categoryid=11>

⁷Killian, K. Helping Till It Hurts? A Multimethod Study of Compassion Fatigue, Burnout, and Self-Care in Clinicians Working with Trauma Survivors. *Traumatology*. 2008, Vol 14(2) June 32-44

⁸Mendenhall, T., Trauma-Response Teams: Inherent Challenges and Practical Strategies in Interdisciplinary Fieldwork. *Families Systems, & Health*, 2006, 24(3):357-362.

⁹Cicognani, E., Pietrantoni, L., Palestini, L., & Prati, G. (2009). Emergency workers quality of life: The protective role of sense of community, efficacy beliefs and coping strategies. *Social Indicators Research*, 94(3):449

¹⁰<http://www.massey.ac.nz/~trauma/issues/2003-1/orner.htm>

¹¹Joint Commission: [https://www.jointcommissionjournal.com/article/S1553-7250\(08\)34066-5/fulltext](https://www.jointcommissionjournal.com/article/S1553-7250(08)34066-5/fulltext)

Blood Products – Last Updated 2/17/2020

STRATEGIES FOR SCARCE RESOURCE SITUATIONS Highest relevance: 1) P=pandemic 2) W=weather 3) MCI

Conventional Capacity – The spaces, staff, and supplies used are consistent with daily practices within the institution. These spaces and practices are used during a major mass casualty incident that triggers activation of the facility emergency operations plan.		Contingency Capacity – The spaces, staff, and supplies used are not consistent with daily practices, but provide care to a standard that is functionally equivalent to usual patient care practices. These spaces or practices may be used temporarily during a major mass casualty incident or on a more sustained basis during a disaster (when the demands of the incident exceed community resources)		Crisis Capacity – Adaptive spaces, staff, and supplies are not consistent with usual standards of care, but provide sufficiency of care in the setting of a catastrophic disaster (i.e., provide the best possible care to patients given the circumstances and resources available). Crisis capacity activation constitutes a significant adjustment to standards of care (Hick et al, 2009).			
Category	RECOMMENDATIONS	Healthcare Facility	Blood Center	Strategy	Conventional	Contingency	Crisis
All Blood Products	1. • Increase donations and consider local increase in frozen reserves P • Increase O positive levels P, W, MCI • Consider maintaining a frozen blood reserve if severe shortage P • Increase recruitment for specific product needs		✓	Prepare			
	2. • Consider adjustment to donor HGB/HCT eligibility/ explore FDA variance*		✓	Adapt			
	3. • Relax travel deferrals for possible malaria and BSE (bovine spongiform encephalitis)*P, MCI		✓	Prepare			
Whole Blood	o 3a. Consider using ABO-type specific whole blood if components cannot be produced MCI, P, W						
Packed Red Blood Cells	4. • Use cell-saver and auto transfusion to degree possible** P, W, +/- MCI	✓		Re-use			
	5. • Limit O negative use to women of child-bearing age P,W, MCI	✓		Conserve			
	6. • Use O positive in emergent transfusion in males or females who are no longer childbearing, to conserve O negative** (Seattle Children's and Mary Bridge Children's currently uses O neg in males < 18 yrs)	✓		Conserve			
	7. • Change donations from whole blood to 2x RBC apheresis collection if specific shortage of PRBC's (Cascade has current capability)	✓	✓	Adapt			
	8. • Use aliquots from parent product for several children when possible P, W, MCI	✓		Conserve			
	9. • Encourage use of blood sparing protocols for all patients P,W,MCI	✓		Adapt			
	10. • Consider use of erythropoietin (EPO) for chronic anemia in appropriate patients	✓		Adapt			
	11. • Prioritize freshest blood for infants and small children	✓		Conserve			
	12. • More aggressive crystalloid resuscitation prior to transfusion in shortage situations (blood substitutes may play future role) Use RBC:Plasma in 1:1 ratio in Trauma cases. P, W, MCI	✓		Conserve			
	13. • Long-term shortage, collect autologous blood pre-operatively and consider crossover transfusion P	✓		Conserve			
	14. • Implement lower hemoglobin triggers for transfusion P, W, MCI	✓	✓**	Conserve			

	15. • Consider limiting high-consumption elective surgeries (select cardiac, orthopedic, spinal, etc.)** (procedures likely to require blood transfusions) P, W, +/- MCI	✓	✓**	Conserve			
	16. • Consider use of EPO in patients with anticipated acute blood loss P, W, MCI						
	17. • Further limit PRBC use, if needed, to active bleeding states, consider subsequent restrictions including transfusion for treatable shock states only** (modification of transfusion thresholds) W, P, MCI	✓	✓**	Re-allocate			
	18. • Consider Minimum Qualifications for Survival (MQS) limits on use of PRBCs (for example, only initiate for patients that will require <6 units PRBCs and/or consider stopping transfusion when >6 units utilized), specific MQS limits should reflect available resources at facility. ** P, W, MCI	✓	✓**	Re-allocate			
	19. • Reduce or waive usual 56 days inter-donation period * based upon pre-donation hemoglobin/ explore FDA variance* P, MCI		✓	Adapt			
	20. • Reduce weight restrictions for 2x RBC apheresis donations according to instruments used and medical director guidance * W, P, MCI		✓	Adapt			
Plasma	21. • Consider increase in red cell: Plasma ratio (3:1) in massive transfusion protocols in consultation with blood bank medical staff** W, P	✓		Conserve			
	22. • Encourage early use of plasma in trauma with anticipated massive hemorrhaging and/or brain injury. Thaw early and use blood warmer.	✓		Conserve			
	23. • Switch community inventory to liquid plasma P, W, MCI		✓**	Adapt			
	24. • Consider using Group A Plasma P, W, MCI		✓**	Adapt			
	25. • Accept female donors without white cell antibody testing. P, W, MCI		✓**	Adapt			
	26. • Though not true substitute, consider use of fibrinolysis inhibitors or other modalities to reverse coagulopathic states (tranexamic acid, aminocaproic acid, activated coagulation factor use, fibrinogen concentrate, prothrombin complex concentrate, or other appropriate therapies) MCI, P, W	✓		Substitute			
	27. • Obtain FDA variance to exceed 24 collections per year for critical types* P +/-W (e.g. Group AB) P, W, MCI		✓	Adapt			
Cryoprecipitate	28. • Encourage early use of cryo in trauma with anticipated massive hemorrhaging and/or brain injury. Thaw early and use blood warmer.	✓		Conserve			
	29. • Though not true substitute, consider use of fibrinolysis inhibitors or other modalities to reverse coagulopathic states (tranexamic acid, aminocaproic acid, activated coagulation factor use, fibrinogen concentrate, prothrombin complex concentrate, or other appropriate therapies). MCI, P, W	✓		Substitute			
	30. • Obtain FDA variance to exceed 24 collections per year for critical types* P +/-W (e.g. Group AB). P		✓	Adapt			
Platelets	31. • Though not true substitute, consider use of desmopressin (DDAVP) to stimulate improved platelet performance in renal and hepatic failure patients MCI, P, W	✓		Substitute			
	32. • Consider aliquoting from apheresis platelets. For children, consider splitting whole blood platelets for more than one recipient. P, W, MCI		✓	Adapt	Leukoreduced	Nonleukoreduced	

33. • Convert whole blood donors to apheresis donors. Standard Practice. W, P, MCI		✓	<i>Adapt</i>			
34. • Transfuse platelets only for active bleeding, further restrict to life-threatening bleeding if required by situation P, W, MCI	✓		<i>Conserve</i>			
35. • No prophylactic use of platelets. P, W, MCI	✓		<i>Adapt</i>			
36. • Accept female platelet donors regardless of HLA antibody, W, P, MCI		✓	<i>Adapt</i>			
37. • Consider changing bacterial detection strategy. MCI, P. Potentially W		✓	<i>Adapt</i>			
38. • Obtain FDA variance to allow new Pool and Store sites to ship across state lines* P, W, MCI		✓	<i>Adapt</i>			
39. • Apply for variance of 5 day outdate requirement *. W, P, MCI		✓	<i>Adapt</i>			

Adapted from the Minnesota Department of Health, Office of Emergency Preparedness

**FDA approval/variance required via American Association of Blood Banks (AABB)*

***Education and/or experience is necessary in the setting of a community-wide critical shortage*

UPDATED: Feb 17, 2020

Next Revision Due: 2023

MASS CASUALTY BURN TREATMENT – 2/24/2020 FINAL

REGIONAL RESOURCE CARD

Harborview Medical Center (HMC)
Transfer Center 1-888-731-4791

INITIAL ASSESSMENT

Call UW Transfer Center to talk with a Burn Fellow/Attending, who can assist with triage, care of burn injured patients and transfer

Mass Casualty Burn Consultation Guide:

1. $\geq 20\%$ TBSA adults, $\geq 15\%$ peds (2nd/3rd degree)
2. Circumferential 3rd degree burn
3. Respiratory injury/inhalation
4. Burn plus trauma or other comorbidities
5. High-voltage electrical (1000V) or chemical injury

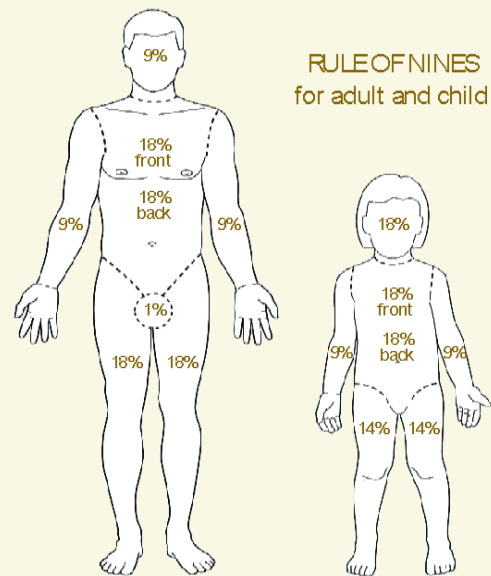
YES

NO

OUTPATIENT MANAGEMENT

< 20% TBSA adults, < 15% TBSA pediatrics

- Oral fluid (sports drinks, electrolyte solution)
- PO pain management
- Refer to burn dressing guide and supply list
- Elevate extremity burns



DO NOT COUNT 1st DEGREE BURNS when calculating the Rule of Nines TBSA (Total Body Surface Area)

- 1st degree: red intact skin , no blisters
- 2nd degree: red/pink, moist, sensate, blisters, blanches
- 3rd degree: dry, leathery, insensate, non-blanching (see photos below for reference)

PRIMARY ASSESSMENT & INTERVENTIONS

6. Protect yourself using body substance isolation. Stop the burning process, cover with loose linen, keep warm
7. Perform standard primary and secondary survey for any trauma patient. Do not be distracted by burn tissue
8. **Airway/Breathing** - Assess for altered LOC, obstruction, respiratory compromise, burns to face or oropharynx
 - 8a. Administer 100% oxygen via non rebreather/ETT, if suspected inhalation injury (enclosed space, carbonaceous sputum, COHgb $\geq 10\%$)
 - 8b. Carbon monoxide (CO) exposure signs and symptoms:
 - HA and nausea (20%-30%)
 - Confusion (30%-40%)
 - Coma (40%-60%)
 - Death (>60%)
 - 8c. Consider intubation for GCS ≤ 8 , $\geq 40\%$ TBSA, direct upper airway injury, deep facial burns
9. **Circulation** - Assess vital signs. Hypovolemic shock signs including tachycardia are common >20% TBSA
 - 9a.2 large bore IV/IO's
 - 9b. **Initial fluids LR/NS** if estimated TBSA $\geq 20\%$ adults and $\geq 15\%$ pediatrics : (See secondary assessment for next steps in fluid resuscitation #12c)
 - ≤ 5 years: 125 mL/hr
 - 6-13 years: 250 mL/hr
 - ≥ 14 years : 500 mL/hr
 - 9c. Treat adult SBP <90 and pediatric SBP < [70 + (2x age in years)] with IV/IO fluid bolus. Avoid extra fluid when possible
10. **Disability** – Assess neurologic status: GCS/AVPU, check pupils, cervical spine protection, if trauma, high-voltage (>1000 V) injury
11. **Expose/Estimate** - Brush away loose material if concern for chemical exposure, remove clothing, jewelry, and contact lens. Protect from heat loss; hypothermia occurs quickly
 - 11a. Circumferential trunk or extremity burn: elevate extremities, check pulses. Full-thickness eschar may need surgical release

Additional Burn Center Consults

- **Cyanide Poisoning** – Consider if severe metabolic acidosis despite adequate fluid resuscitation as outlined in 12c.
- **Electrical**–If myoglobin in urine (red pigment) there is a risk of rhabdomyolysis
- **Chemical and radiologic** – consider need for antidote or specific therapies. Consult Poison Control

SECONDARY ASSESSMENT & INTERVENTIONS

12. Adjuncts-

- 12a. **Nasogastric or orogastric** – Intubated patients
- 12b. **Estimate TBSA** using Rule of Nines chart
- 12c. **Consensus formula LR/NS**: 3 mL x kg x % TBSA= fluids in 24 hrs. Give ½ in first 8 hrs and ½ in next 16 hrs. Increase/decrease fluids by 20% hourly to target UO
- 12d. **Pediatrics**:<30kg, add maintenance fluid (below) using D5LR in addition to Consensus formula in #12c
 - 4 mL x 1st 10 kg
 - 2 mL x 2nd 10 kg
 - 1 mL x remaining kg = total mL/hr
- 12e. **Foley** – Target urine output (uo) 30 mL/hr adults or 1mL/kg/hr in pediatrics < 30 kg.
- 12f. **Pain control** –Use small doses of opioids

13. **History** – AMPLET or SAMPLE mnemonic

14. **Head to Toe Assessment**

YES

CRITICAL BURN FEATURES

15. TBSA >25% partial thickness or >10% full-thickness burns
16. Circumferential full thickness burns
17. Burn plus trauma or other comorbidities
18. Hemodynamic instability despite ongoing fluid resuscitation as outlined in 9b and 12c

CRITICAL: High priority for transfer to Burn Center.

YES

NO

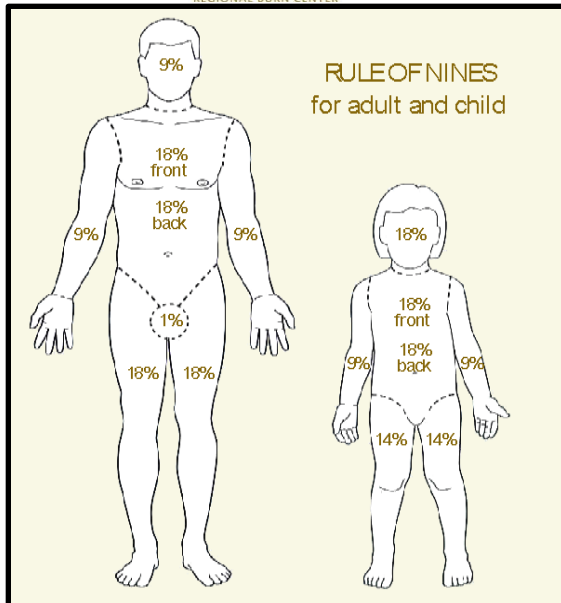
SERIOUS BURN FEATURES

19. Secondary priority for transfer-may have to manage in place awaiting transfer (up to 72 hours)
 - 20. Refer to burn dressing guide and supply list
 - 21. Infection control – provider gown, glove, and mask when wounds exposed. No prophylactic antibiotics
 - 22. Intubated: Consider tube feeds
 - 22a. Non-intubated: encourage high calorie PO

	Resource and Recommendations	Strategy	Conventional	Contingency	Crisis
Command and Control, Communication, Coordination	General Preparedness Information <ul style="list-style-type: none"> 23. HMC Burn Center is an ABA/ACS verified burn center in the WAMI region with 18 ICU and 23 acute care beds. 24. Mass burn incidents are unusual but do occur. The ability of non-burn hospitals to triage and initially treat victims is critical to successful response and should be a planning goal of all hospitals with numbers of victims depending on the facility size and role in the community. 25. In a major incident, victims may require care at the initial receiving hospital for up to 72 hours until transfer to definitive burn care. 26. The role of the Disaster Medical Control Center (DMCC) in any major event is to distribute patients from the scene to area hospitals. There are different DMCC's in the region. HMC is the DMCC for King County. Patient distribution is often done by the DMCC with limited information from the field. In an event involving many burn patients it is highly probable that multiple ED's will receive patients and be responsible for their initial triage/stabilization. 27. Notification: In a major burn incident, HMC, DMCC, NWHRN, Public health and area EOC's will be notified. 28. If HMC is unable to accommodate casualties or require assistance with transportation/resource issues, multiple levels of coordination and communication will need to occur between area hospitals, DMCC, Healthcare coalitions, Public Health, area EOC's and potentially other regional burn centers depending on the magnitude of the event and extent of injuries. <i>(See Burn Surge Annex, pending 2021)</i> 	<i>Prepare</i>			
Space	Capacity <ul style="list-style-type: none"> 29. Each facility is encouraged to activate its own internal contingency/disaster plan if needed to manage multiple burn patients. 30. In a major event, some burn ICU patients may need to be cared for in non-burn center acute care units. 31. In coordination with HMC Burn Center, forward movement to other burn centers in adjoining states may be needed. 	<i>Adapt</i>			
	<ul style="list-style-type: none"> 32. National Disaster Medical System (NDMS) patient movement may need to be utilized. 	<i>Adapt</i>			

	Resource and Recommendations	Strategy	Conventional	Contingency	Crisis
Supplies (for 72 hours)	<p>Outpatient/ Supplies Planning</p> <ul style="list-style-type: none"> 33. Institutions should prepare based on role in community. Outpatient clinics and urgent care centers may also cache appropriate supplies for their location and patient population. Suggested burn dressing supplies (per patient) (see below) <p>Inpatient Supplies Planning</p> <ul style="list-style-type: none"> 34. Institutions should prepare based on role in community. In contingency or crisis situations non-burn centers may be asked to stabilize or potential provide extended care to burn patients. Suggested burn dressing supplies (per patient) (see below) 	<p><i>Prepare</i></p> <p><i>Increase Supply</i></p>			
Staffing	<p>Staff</p> <ul style="list-style-type: none"> 35. Strong consideration should be given to training physician and nursing staff on care of major burns pre-incident and having quick-reference cards/materials available for burn stabilization. 36. Level II & III Trauma Centers should consider having a cohort of providers trained in the ABA Advanced Burn Life Support (ABLS) and ACS Disaster Management Emergency Preparedness (DMEP). 37. Identify staff with prior burn treatment experience (i.e. military). 38. See Staffing Scarce Resource Card for further staffing considerations. 39. Staff should have access to just-in-time training provided to non-burn nursing and physician staff reinforcing key points of burn patient care (including importance of adequate fluid resuscitation, urine output parameters, principles of analgesia, dressing changes, wound care and monitoring) 40. In a Mass casualty event, call the HMC Transfer Center 1-888-731-4791 for consultation in caring for burn patients. 41. NDMS personnel and other supplemental staff may be required. 	<p><i>Adapt</i></p> <p><i>Adapt</i></p> <p><i>Conserve</i></p> <p><i>Adapt</i></p> <p><i>Subst</i></p> <p><i>Prepare</i></p>			
Special	<p>Special Considerations</p> <p>Consider availability of resources for:</p> <ul style="list-style-type: none"> 42. Pediatrics: age-and size appropriate equipment: intravenous, intraosseous access devices, medication dosing guides. Consider using color-coding pediatric guides. 				

	Resource and Recommendations	Strategy	Conventional	Contingency	Crisis
Triage	<p>Critical Burn Features : Survivability Grid</p> <ul style="list-style-type: none"> • 43. The following grid provides an example of triage decisions that may become necessary in the setting of overwhelmed resources or in austere conditions where crisis standards of care may be instituted. The survivability grid utilizes the same 4 color scheme used for EMS personal. Survivability will differ if the patient has sustained an inhalation injury. • 44. Use of the survivability table should be done in close collaboration with the Burn Center but should NOT substitute for a more global assessment of the patient. (See ABLS 2018 update) http://ameriburn.org/wp-content/uploads/2019/08/2018-abls-providermanual.pdf • 45. If Burn Center resources are limited, critical burn patients may need to be cared for in non-burn centers. Just in Time training and on-line resources are available to non-burn centers in these situations. Please refer to: https://crisisstandardsofcare.utah.edu/Pages/home.aspx; This website requires registration and login password. please consider planning ahead and gaining access before an event occurs. 	<i>Re- Allocate</i>			



Burn Dressing Guide and Supply Estimates:

- Goal for partial thickness burn healing is to keep the wound moist and free from infection
- **1st degree burn:**
 - 1st degree burns do not count when calculating the TBSA using the Rule of Nines burn chart. Apply lotion or ointment and leave open to air. No dressings needed
- **2nd degree burn:**
 - Apply a greasy gauze dressing with thin layer of antibiotic ointment. Change every 1-2 days
 - Or apply silver impregnated dressing to moist burns on flat surfaces. Dressing must lay flat against the burn. Secure in place with elastic, netting etc. Change every 7 days
- **3rd degree burn:**
 - Apply SSD and cover with thin layer of gauze Change every 1-2 days
- SSD 400 gm jar: 1 jar per 9% tbsa
- Antibiotic ointment: 1 tube per 9% tbsa
- Greasy gauze 4 in x 9 yard roll: 1 roll per 9% tbsa
- Gauze 6 inch x 3 yd roll: 1 roll per 9% tbsa
- 4x4 gauze: (1 box or boat) per 4% tbsa

Adult	SSD (jar)	Greasy gauze (roll)	Antibiotic ointment (tubes)	Kerlix roll (6 in)	4x4 Gauze (Boat or package)	4x8 Gauze	18x18 Gauze	Elastic netting (inch)	Silver Impregnated drg
Head	1	1/4 face	8	-	1	3	-	10 inch	-
Arm	1	1	8	1	-	-	1-2	6 inch	Three 8x 8s OR One 8x 20
Hand/Fingers	1/4	1/4	1	1/2	1	1	-	Hand 4 in Fingers 1 in	-
Torso (ant/post)	2 each side	2	16	2	-	-	2	12 inch	Four 8 x 8s OR Two 8x 20s
Perineal (ant/post)	1/2 each side	1/4	1	-	1	1	2	12 inch	Two 8x 8s
Leg	2	2	8	2	-	-	3-4	10 inch	Six 8x 8s OR Four 8x 20
Foot/Toes	1/2 each	1/4	1	1/2	1	1-2	-	6 inch	-

References:

- i. American Burn Association. Advanced Burn Life Support Provider Manual 2018 Update. <http://ameriburn.org/wp-content/uploads/2019/08/2018-abls-providermanual.pdf>
- ii. American Burn Association. 2013 Burn Care Resources in North America US Burn Centers available from <http://ameriburn.org/BCRDPublic.pdf>
- iii. American College of Surgeons, ATLS: Advanced Trauma Life Support. 2018, Chapter 9, Pgs 169-185
- iv. DMEP: Disaster Management and Emergency Course, American College of Surgeons Committee on Trauma, Subcommittee on Disaster And Mass Casualties 2016 112-120
- v. Buidelines for Burn Care Under Austere Conditions: Introduction to Burn Disaster, Airway and Ventilator Management, and Fluid Resuscitation; ABA, J Burn Care&Res; Sep-Oct,2016; Kearns, Randy D.
- vi: Guidelines for Burn Care Under Austere Conditions: Special Etiologies: Blast, Radiation, and Chemical Injuries; ABA, JBurn Care&Res 38(1) e482; Cancio, Leopoldo C; Jan-Feb, 2017
- viii. <https://crisisstandardsofcare.hsc.utah.edu/> Requires login and password, recommend obtaining during planning not response.

1st degree Superficial



2nd degree Partial Thickness



3rd degree Full Thickness



FINAL APPROVED: 2/24/2020

Next Revision due: 2023

HEMODYNAMIC SUPPORT AND IV FLUIDS – March 19, 2019 FINAL

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

Conventional Capacity – The spaces, staff, and supplies used are consistent with daily practices within the institution. These spaces and practices are used during a major mass casualty incident that triggers activation of the facility emergency operations plan.	Contingency Capacity – The spaces, staff, and supplies used are not consistent with daily practices, but provide care to a standard that is functionally equivalent to usual patient care practices. These spaces or practices may be used temporarily during a major mass casualty incident or on a more sustained basis during a disaster (when the demands of the incident exceed community resources)	Crisis Capacity – Adaptive spaces, staff, and supplies are not consistent with usual standards of care, but provide sufficiency of care in the setting of a catastrophic disaster (i.e., provide the best possible care to patients given the circumstances and resources available). Crisis capacity activation constitutes a significant and adjustment to standards of care (Hick et al, 2009).			
RECOMMENDATIONS		Strategy	Conventional	Contingency	Crisis
Equipment and Supplies and Training <ul style="list-style-type: none"> 1. Cache intravenous (IV) cannulas, tubing, fluids, medications, and administration supplies, oral rehydration packets (ORS) and intraosseous (IO) equipment, including drill and manual placement needles. 2. Conduct training and education re: oral and enteral hydration, IO and hypodermoclysis fluid administration options. 3. Develop system wide scarce resource communication plans with clear lines of responsibility and accountability to keep staff aware of shortages and conservation strategies. 4. Consider centralized inventory control of critical medications and fluids (e.g. procedural areas, ORs, day surgery areas may have separate inventory control of critical resources). 		Prepare			
IV Fluid Conservation Strategies¹ <ul style="list-style-type: none"> 5. Monitor CDC, FDA and ASHP updates on supply and conservation strategies. 6. Switch to oral therapy whenever possible (e.g. antibiotics, anticoagulants, electrolyte replacements). 					
<ul style="list-style-type: none"> 7. Discontinue KVO (Keep vein open) orders. 8. Adopt NPO strategies as recommended by the ASA² (2 hours for liquids, 4 hours for breast milk, 6 hours for infant formula, light meal or nonhuman milk) to limit “maintenance IVF”. 9. Review electronic medical record order sets to ensure conservation strategies are being enforced. 10. If oral therapy is not feasible or indicated consider IM or SQ injection. 					
<ul style="list-style-type: none"> 11. If IV medications must be used, consider alternative compounding strategies to minimize IVF use such as syringe infusion pumps; IV push administration, following the “ISMP Safe Practice Guidelines for Adult IV Push Medications”.³ 12. Consider using alternative fluids (e.g. dextrose or LR), or other volume expanders (e.g. colloids) depending on clinical situation. 13. Repackage small bags from larger source following the “Repackaging of certain Human Drug Products by Pharmacies and Outsourcing Facilities” 2017, authored by FDA.⁴ 					
Emphasize Enteral Hydration Instead of IV Hydration Provide oral hydration (ORT), when possible <ul style="list-style-type: none"> 14. Provide guidelines for oral rehydration therapy, including indications for hospital referral, to outpatient providers. <div data-bbox="155 1138 359 1235"> Utilize Appropriate Oral Rehydration Solution </div> <ul style="list-style-type: none"> 15. Oral rehydration solution: 1-liter water (5 cups) + 1 tsp salt + 8 tsp sugar, add flavor (e.g., ½ cup juice) as needed. 16. Rehydration for moderate dehydration 50-100mL / kg over 2-4 hours. <div data-bbox="155 1235 359 1393"> Pediatric Hydration </div> <p>Pediatric maintenance fluids:</p> <ul style="list-style-type: none"> 17. Four mL/kg/h for first 10kg of body weight (40 mL/h for 1st 10 kg). 18. Two mL/kg/h for second 10kg of body weight (20 mL/h for 2nd 10kg = 60 mL/h for 20kg child). 19. One mL/kg/h for each kg over 20kg (example - 40 kg child = 60 mL/h plus 20 mL/h = 80 mL/h). <p>Supplement for each diarrhea or emesis.</p>		Substitute			
Provide nasogastric or gastrostomy (NG, G-tube) hydration for both adults and pediatric patients when applicable. <ul style="list-style-type: none"> 20. For fluid support, 8-12F (pediatric: infant 3.5F, < 2yrs 5F) tubes are better tolerated than standard size tubes. 21. For additional equipment size guidelines, refer to a pediatric length-based resuscitation tape, e.g., the Broselow™ Tape. <p>NOTE: Clinical (urine output, etc.) and laboratory (BUN, urine specific gravity) assessments and electrolyte correction are key components of fluid therapy and are not specifically addressed by these recommendations.</p>		Substitute			

IV and Syringe Pumps <ul style="list-style-type: none"> 22. Ensure IV pumps are charged and battery life monitored. 23. Consider stocking alternate emergency equipment for IV administration such as buretrols and drip counters, other devices such as the Drip Assist[†] designed for use in austere environments. 	Conserve			
<ul style="list-style-type: none"> 24. Reserve IV pumps, if limited, for use for critical medications such as sedatives, analgesics, certain antibiotics and hemodynamic support. 	Conserve			
Substitute Epinephrine for Other Vasopressor Agents in Shortage <ul style="list-style-type: none"> 25. For hemodynamically unstable patients > 18 yo who are adequately volume-resuscitated, consider adding 6mg epinephrine (6mL of 1mg/mL) to 1000mL NS on mini-drip tubing and titrate to target blood pressure. 26. For children < 18 yrs. add 0.6 X weight(kg) to equal total mg of Epinephrine to add to a 100 mL bag of NS. Run on mini-drip tubing start at 1 mL/hr (= 60 drips/hr or 1 drip/minute). This starting epinephrine rate = 0.1 mcg/kg/min, a standard starting epinephrine dose, assuming that 1 mL=60 drips for mini-drip tubing; increase drip rate to target blood pressure. 	Substitute			
Re-use CVP, NG, and Other Supplies After Appropriate Sterilizations/Disinfection <ul style="list-style-type: none"> 27. In crisis situations, when considering re-use of otherwise single use disposable equipment, alternate sterilization techniques should be discussed using available expert opinions such as CDC, WHO, local public health and infection control specialists. When possible, consensus recommendation should be made. Possible sterilization options during crisis include: <ul style="list-style-type: none"> 27a) High-level disinfection for at least twenty minutes for devices in contact with body surfaces (including mucous membranes); glutaraldehyde, hydrogen peroxide 6%, or bleach (5.25%) diluted 1:20 (2500 ppm) may be acceptable solutions. NOTE: chlorine levels reduced if stored in polyethylene containers - double the bleach concentration to compensate). 	Re-use			
Intraosseous and Subcutaneous (Hypodermoclysis) Replacement Fluids <ul style="list-style-type: none"> 28. Consider “clysis” as an option when alternative routes of fluid administration are impossible/unavailable. 29. Intraosseous administration should be considered before hypodermoclysis. Intraosseous <ul style="list-style-type: none"> 30. Intraosseous infusion is not generally recommended for hydration purposes, but may be used until alternative routes are available. Intraosseous infusion requires pump or pressure bag. Rate of fluid delivery is often limited by pain of pressure within the marrow cavity. This may be reduced by pre-medication with lidocaine (preservative-free) 0.5mg/kg slow IV push. Hypodermoclysis ^{5,6} <ul style="list-style-type: none"> 31. Cannot correct more than moderate dehydration via this technique. 32. Many medications cannot be administered subcutaneously. 33. Common infusion sites: pectoral chest, abdomen, thighs, upper arms. 34. Common fluids: normal saline (NS), D5NS, D5 1/2 NS (Can add up to 20-40 mEq potassium if needed.). 35. Insert 21/24 gauge needle into subcutaneous tissue at a 45 degree angle, adjust drip rate to 1-2 mL per minute (May use 2 sites simultaneously if needed.). 36. Maximal volume about 3 liters / day; requires site rotation. 37. Local swelling can be reduced with massage to area. 38. Hyaluronidase 150 units / liter facilitates fluid absorption but is not required; may not decrease occurrence of local edema. 	Substitute			
Consider Use of Veterinary and Other Alternative Sources for Intravenous Fluids and Administration Sets	Adapt			

Adapted From the Minnesota Department of Health, Office of Emergency Preparedness

FINAL version: March 19, 2019

Next review and update due: 2022

¹ <https://www.fda.gov/downloads/Drugs/DrugSafety/DrugShortages/UCM582461.pdf>

² http://anesthesiology.pubs.asahq.org/article.aspx?articleid=2596245&_ga=2.204142672.159725813.1522250986-851673073.1522250986

³ <https://www.ismp.org/sites/default/files/attachments/2017-11/ISMP97-Guidelines-071415-3.%20FINAL.pdf>

⁴ <https://www.fda.gov/downloads/Drugs/Guidances/UCM434174>.

⁵ Caccialanza, R, et al, Subcutaneous Infusions of Fluids for Hydration or Nutrition: A Review, JPEN 2018;42:296-307

⁶ Bruno, VG, Hypodermoclysis: a literature review to assist in clinical practice, Einstein (Sao Paulo) 2015;13(1):122-8



MECHANICAL VENTILATION/EXTERNAL OXYGENATION

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

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RECOMMENDATIONS		Strategy	Conventional	Contingency	Crisis
Increase Hospital Stocks of Ventilators and Ventilator Circuits, ECMO or bypass circuits		<i>Prepare</i>			
Access Alternative Sources for ventilators / specialized equipment <ul style="list-style-type: none">Obtain specialized equipment from vendors, healthcare partners, regional, state, or Federal stockpiles via usual emergency management processes and provide just-in-time training and quick reference materials for obtained equipment.		<i>Substitute</i>			
Decrease Demand for Ventilators <ul style="list-style-type: none">Increase threshold for intubation / ventilation.Decrease elective procedures that require post-operative intubation.Decrease elective procedures that utilize anesthesia machines.Use non-invasive ventilatory support when possible.		<i>Conserve</i>			
Re-use Ventilator Circuits <ul style="list-style-type: none">Appropriate cleaning must precede sterilization.If using gas (ethylene oxide) sterilization, allow full 12-hour aeration cycle to avoid accumulation of toxic byproducts on surface.Use irradiation or other techniques as appropriate.		<i>Re-use</i>			
Use Alternative Respiratory Support Technologies <ul style="list-style-type: none">Use transport ventilators with appropriate alarms – especially for stable patients without complex ventilation requirements.Use anesthesia machines for mechanical ventilation as appropriate / capable.Use bi-level (BiPAP) equipment to provide mechanical ventilation. (Contingency and Crisis)Consider bag-valve ventilation as temporary measure while awaiting definitive solution / equipment (as appropriate to situation extremely labor intensive and may consume large amounts of oxygen).		<i>Adapt</i>			
Assign Limited Ventilators to Patients Most Likely to Benefit if No Other Options are Available: See Pediatric and/or Adult Critical Care Algorithm		<i>Re-allocate</i>			

Adapted From the Minnesota Department of Health, Office of Emergency Preparedness

As of June 19, 2017



OXYGEN - 03/29/2019 DRAFT REVISION

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

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RECOMMENDATIONS		Strategy	Conventional	Contingency	Crisis
Inhaled Medications <ul style="list-style-type: none"> 1. Use compressed or room air for administration of nebulized medications when clinically appropriate. 2. Restrict the use of Small Volume Nebulizers when inhaler substitutes are available. 3. Restrict continuous nebulization therapy. 4. Minimize frequency through medication substitution that results in fewer treatments (6h-12h instead of 4h-6h applications). 5. Change children from albuterol continuous nebulizers to Albuterol 8 puffs MDI Q2 hrs when they are ready to stop continuous treatments. Only use albuterol nebulizers in continuous form for truly acute status asthmaticus. 		Substitute & Conserve			
High-Flow Applications <ul style="list-style-type: none"> 6. Assure all resuscitation oxygen bags have shut off valves and are shut off when not in use. 		Conserve			
<ul style="list-style-type: none"> 7. Restrict the use of high-flow adult cannula systems as these can demand 12 to 40 LPM flows. 8. Restrict the use of simple and partial rebreathing masks to 10 LPM maximum. 9. Consider intubation or non-invasive ventilation with a well-sealed mask over the use of high flow oxygen delivery systems for both adult and pediatric patients during critical shortages. 		Conserve			
Air-Oxygen Blenders <ul style="list-style-type: none"> 10. Eliminate the low-flow reference bleed occurring with any low-flow metered oxygen blender use. This can amount to an additional 12 LPM. Reserve air-oxygen blender use for mechanical ventilators using high-flow non-metered outlets. (These do not utilize reference bleeds). 11. Disconnect blenders when not in use. 		Conserve			
Oxygen Conservation Devices <ul style="list-style-type: none"> 12. Use reservoir cannulas if available at 1/2 the flow setting of standard cannulas. 13. Replace simple and partial rebreather mask use with reservoir cannulas or venti-masks at flow rates of 6-10 LPM 14. Use High Efficiency nebulizers and use air flow instead of oxygen when clinically possible. 		Substitute & Adapt			
Augment Oxygen Supply <ul style="list-style-type: none"> 15. Use hospital-based or independent home medical equipment supplier oxygen concentrators if available to provide low-flow cannula oxygen for patients and preserve the primary oxygen supply for more critical applications. 16. Consider other source of oxygen such as dental or veterinary offices. 17. Obtain oxygen supply from industrial sources, such as supplied by welding companies and underwater diving operations. 		Substitute & Conserve			
<ul style="list-style-type: none"> 18. Reduce hospital wide PSI from 50-40. 		Conserve			
Monitor Use and Revise Clinical Targets <ul style="list-style-type: none"> 19. Employ oxygen titration protocols to optimize flow or % to match targets for SPO2 or PaO2. 20. Discontinue oxygen at earliest possible time. 		Conserve			

<ul style="list-style-type: none"> 21. Consider variable parameters for initiating and continuing oxygen therapy: 							
Starting Example Normal Lung Adults Pediatrics Severe COPD History	Initiate O2 SPO2 <88-90% SPO2 <88-90% SPO2 <85%	O2 Target SPO2 90% SPO2 90% SPO2 88-90%	Note: These target ranges need to be continually re-evaluated depending on resources available, the patient's clinical presentation, or measured PaO2 determination. If no pulse oximetry is available initiate oxygen therapy based on clinical assessment (e.g. cyanosis, increased work of breathing, valid respiratory scores etc.)				
Expendable Oxygen Appliances <ul style="list-style-type: none"> 22. All non-standard disinfection and sterilization procedures should be tested and assessed prior to widespread use. Possible options during crisis include: Use terminal sterilization or high-level disinfection procedures for oxygen appliances, small & large-bore tubing, and ventilator circuits. Bleach concentrations of 1:10, high-level chemical disinfection, or irradiation may be suitable. Ethylene oxide gas sterilization (if available) is optimal, but requires a 12-hour aeration cycle to prevent ethylene chlorohydrin formation with polyvinyl chloride plastics. 				Re-use			
Oxygen Re-Allocation Implementation <ul style="list-style-type: none"> 23. For patient prioritization for oxygen administration or re-allocation during severe resource limitations please see Adult and Pediatric Critical Care Algorithms. 				Re-Allocate			

Adapted From the Minnesota Department of Health, Office of Emergency Preparedness

DRAFT REVISION As of March 29, 2019

Renal Replacement Therapy Card

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

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Category	RECOMMENDATIONS	Inpatient	Outpatient	Strategy	Conventional	Contingency	Crisis
A. General	1. All organizations that provide dialysis need to maintain internal emergency plans to provide care for the special needs of dialysis patients during any external or internal emergency that may disrupt standard operations. These plans should address appropriate water and power supply, equipment and supply needs and staff/provider considerations. (See links to resources in #2 below)	✓	✓	Prepare			
	2. All dialysis providers must advise their patients in developing their own preparedness plans including emergency and contingency plans for food, medications, transportation and emergency contact resources. <ul style="list-style-type: none"> Dialysis patients need to be self-sufficient for up to 96hrs. Note that shelters are unlikely to have foods appropriate for renal dietary needs (low sodium, etc.). Personal planning guidance is available at: https://www.kidney.org/sites/default/files/11-10-0807_IBD_disasterbrochure.pdf https://www.davita.com/kidney-disease/overview/living-with-ckd/emergency-preparedness-for-people-with-kidney-disease/e/4930 		✓				
	3. Medical needs of re-located renal failure patients from outside our region are substantial; the medical leadership of Northwest Kidney Center, DaVita and NW Renal Network need to be made aware of such incoming patients in order to be able to plan for their medical needs. ¹	✓	✓				
	Transportation Interruptions 4. Chronic dialysis patients should coordinate with their service providers/dialysis clinics first for transportation and other assistance during service/transportation interruptions.		✓	Prepare			
	5. If individual providers/dialysis clinics are unable to meet emergent supplemental transportation needs, refer to the King County Winter Weather Medical Transport Plan and Pierce County Department of Emergency Management for their possible assistance ² .		✓	Adapt			
B. Water	Water Supply 6. Identify and quantify water-purifying capabilities for dialysis 7. Identify alternative water source if city water is unavailable	✓	✓	Prepare			
	8. Identify limitations and special arrangements needed to use water tanker <ul style="list-style-type: none"> a) Availability of reverse osmosis (RO) machines with carbon tanks b) Available means to generate adequate water pressure to units providing dialysis 	✓	✓				
	Water Contamination 9. Consider alternate sources of highly purified water (e.g. Northwest Kidney Center water reserve tank, individual facility wells, etc.) keeping in mind that potable water alone is NOT sufficiently purified for dialysis.	✓	✓	Prepare			
	10. Consider transferring stable inpatients to outpatient dialysis centers for dialysis treatments and vice versa depending on location of purified water source	✓	✓	Substitute Adapt			

	11. Consider use of other regional assets for water reserves a) JBLM assets: well, tanker b) Navy assets: desalination and reverse osmosis capabilities (ship dependent) c) Commercial vessels	✓	✓	Adapt												
C. Power	12. Consider transferring stable inpatients to outpatient dialysis centers for dialysis treatments and vice versa	✓	✓	Substitute Adapt												
	13. Consider transferring inpatients or outpatients to other hospitals or facilities out of the affected region until issues have been resolved.	✓	✓													
D. Supplies	Dialysis Catheters, Machines, Reverse Osmosis Machines, and/or Other Supply Shortages 14. Maintain adequate stock of dialysis tubing sets and venous/peritoneal access catheters (Quinton, etc.) and medications (e.g. Kayexalate)	✓	✓	Prepare												
	15. Identify other sources of supplies and machines	✓	✓													
	16. Transfer machines/supplies between outpatient centers and hospitals, or between hospitals	✓	✓	Substitute												
E. Staff	17. Consider alternative staffing assignments with the following recommendations: <table><tr><th colspan="3">Alternative Staff Recommendations (listed in order of consideration)</th></tr><tr><th>Dialysis Techs</th><th>Dialysis Nurses</th><th>MDs (Nephrologist)</th></tr><tr><td>1. Former Dialysis Techs who are now techs in other specialties 2. General Nurse with prior dialysis experience.</td><td>1. General RN or Transplant RN with previous HD¹ or PD² experience 2. Critical Care nurse with a dialysis training 3. Critical Care Nurse with no dialysis experience and JIT³ 4. General nurse with JIT</td><td>1. Telemedicine nephrologist 2. Retired nephrologist who has maintained medical license 3. ARNPs/PAs trained in dialysis 4. Critical Care MD with experienced dialysis nurse and JIT training. 5. Dialysis nurse with extensive inpatient dialysis experience</td></tr></table> ¹ Hemodialysis ² Peritoneal Dialysis ³ Just-in-time Training (i.e. video, written instructions, handbook, etc.)	Alternative Staff Recommendations (listed in order of consideration)			Dialysis Techs	Dialysis Nurses	MDs (Nephrologist)	1. Former Dialysis Techs who are now techs in other specialties 2. General Nurse with prior dialysis experience.	1. General RN or Transplant RN with previous HD ¹ or PD ² experience 2. Critical Care nurse with a dialysis training 3. Critical Care Nurse with no dialysis experience and JIT ³ 4. General nurse with JIT	1. Telemedicine nephrologist 2. Retired nephrologist who has maintained medical license 3. ARNPs/PAs trained in dialysis 4. Critical Care MD with experienced dialysis nurse and JIT training. 5. Dialysis nurse with extensive inpatient dialysis experience			Substitute			
	Alternative Staff Recommendations (listed in order of consideration)															
Dialysis Techs	Dialysis Nurses	MDs (Nephrologist)														
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F. Treatment	Crush Syndrome 18. Initiate normal saline IV hydration and acidosis prevention protocols immediately either pre-hospital or as soon as possible upon arrival to a healthcare facility to prevent/treat rhabdomyolysis. Additional treatment recommendations: a) avoid nephrotoxic agents such as NSAIDS, aminoglycosides, ACE/ARB’s along with other drugs which may cause hyperkalemia b) aggressive monitoring and treatment of potential hyperkalemia c) close monitoring of fluid status.	✓		Conserve												

	Mode of Dialysis 19. Optimize the mode of dialysis to provide care for the most patients possible given resources available a) if water is scarce, consider PD and CRRT as modes of dialysis b) if water is readily available restrict to HD or PD and discontinue CRRT for staff considerations.	✓	✓	Substitute			
	Increased Demand on Resources 20. Shorten duration of dialysis for patients that are more likely to tolerate it safely	✓	✓	Conserve			
	21. Patients to utilize their home “kits” of medication (Kayexalate) and follow dietary plans to help increase time between treatments.		✓				
G. Triage	Insufficient Resources Available For All Patients Requiring Dialysis 22. Change dialysis from ‘scheduled’ to ‘as needed’ based on clinical and laboratory findings (particularly hyperkalemia and impaired pulmonary function) – parameters may change based on demand for resources	✓	✓	Conserve			
	23. Conceivable (but extraordinary) situations may occur where resources are insufficient to the point that some patients may not be able to receive dialysis (for example, pandemic when demand nationwide exceeds available resources). Prioritization should follow the Crisis RRT Triage Algorithm and Worksheet. In multi-organ system failure (MOSF) refer to the Adult/Pediatric Critical Care Triage Algorithm and Worksheet.	✓	✓	Re-allocate			

Adapted From the Minnesota Department of Health, Office of Emergency Preparedness

Approved: 5/10/17

¹ Medical Leadership Contact Information: DaVita (253-733-4602); Northwest Kidney Centers (206-720-8505); NW Renal Network (206-923-0714).

² Contact Public Health Seattle King County Duty officer, Pierce County Emergency Management Duty Officer or the Northwest Healthcare Response Network Duty Officer for more information.

PARTICULATE RESPIRATORS¹ AND GENERAL PPE (N95, Elastomeric, PAPR, CAPR)

STRATEGIES FOR SCARCE RESOURCE SITUATIONS



Conventional Capacity – The spaces, staff, and supplies used are consistent with daily practices within the institution. These spaces and practices are used during a major mass casualty incident that triggers activation of the facility emergency operations plan.	Contingency Capacity – The spaces, staff, and supplies used are not consistent with daily practices, but provide care to a standard that is functionally equivalent to usual patient care practices. These spaces or practices may be used temporarily during a major mass casualty incident or on a more sustained basis during a disaster (when the demands of the incident exceed community resources)	Crisis Capacity – Adaptive spaces, staff, and supplies are not consistent with usual standards of care, but provide sufficiency of care in the setting of a catastrophic disaster (i.e., provide the best possible care to patients given the circumstances and resources available). Crisis capacity activation constitutes a significant adjustment to standards of care (Hick et al, 2009).			
RECOMMENDATIONS		Strategy	Conventional	Contingency	Crisis
General Infection Control Procedures <ul style="list-style-type: none"> 1. Screen all patients for symptoms specific to current situation and keep updated to any changing screening recommendations 2. At healthcare facilities where patients have scheduled appointments, consider screening prior to arrival to limit exposure and resources 3. Establish procedures for managing visitors and ill healthcare personnel. 4. Establish triage procedures and separate areas for ill and well patients. 5. Assign dedicated staff to minimize exposure. 6. Require, when possible, or strongly encourage vaccination of primary personnel and first responders, according to vaccine schedule as recommended for existing circumstances by the CDC and the Advisory Committee for Immunization Practices (ACIP). 7. Seriously consider creation of a registry to reflect the vaccination status of primary personnel and first responders to aid in decisions regarding service assignments. 8. Educate and routinely train all staff regarding appropriate use and proper donning and doffing procedures of PPE and particulate respirators. 9. Maintain good hand hygiene procedures including gloves, hand washing with soap and water and/or alcohol based hand sanitizers depending on the current recommendations. 10. Maintain plan for N95 Fit Testing Engineering Controls <ul style="list-style-type: none"> 11. When applicable to specific institution consider designing and installing engineering controls to reduce or eliminate exposure by shielding healthcare providers and other patients from infection individuals. Examples of engineering controls include physical barriers or partitions to guide patients through triage areas, curtains between patients in shared areas, closed suctioning systems for airway suctioning for intubated patients, as well as appropriate air-handling systems (with appropriate directionality, filtration, exchange rate, etc.) that are installed and properly maintained. Cache/ Increase Supply Levels <ul style="list-style-type: none"> 12. Clarify current CDC and OSHA guidelines for respirator and other PPE use; monitor for updates and recommendations.² 13. Cache additional supplies of PPE and respirators and their functional components (e.g. fit testing supplies, batteries, cartridges, filters, hoods etc.). 14. Review vendor agreements, contingencies for delivery and production, including alternate vendors. 15. Consider other NIOSH approved respirators in times of short supply (e.g. These include N99, N100, P95, P99, P100, R95, R99, and R100.)⁵ 16. Review current supply of PPE and determine baseline and surge burn rates to better plan supply needs. 17. Maintain a reserve sufficient to meet estimated needs of PPE for all infectious diseases. 18. Review cached PPE on a regular basis for expirations dates and consider replacing/updating caches by rotating PPE into daily use 		Prepare			
<ul style="list-style-type: none"> 19. Obtain masks, cartridges and other PPE from alternate sources such as industrial suppliers and companies – welding, manufacturing, etc. – as indicated. 		Substitute			

<ul style="list-style-type: none"> 20. Request Strategic National Stockpile of respirators with the knowledge that they may be from different manufacturers. They may not be functional in all situations (i.e. surgical use) and they may require additional fit testing before deployment. 21. Do not discard unused expired PPE; submit for extension through *** (?NIOSH? CDC?) 				
Decrease Use of PPE <ul style="list-style-type: none"> 22. Clarify current CDC, OSHA and NIOSH guidelines for PPE use; monitor for updates and recommendations.^{2,3} 23. Medical/surgical masks can be reused by infected patients until the masks are no longer useable due to moisture or damage. 	<i>Substitute & Conserve</i>			
<ul style="list-style-type: none"> 24. When PPE, especially Respirators are in short supply, aerosol-generating procedures should only be performed on patients when medically necessary and cannot be postponed. 25. Limit the number of healthcare personnel with patient contact to only those essential for patient care and support, especially during aerosol generating procedures. 26. Consider primary use of PAPRs, CAPRs Elastomeric or other Respirators to conserve on N95 masks 27. Ensure staff are educated and understand specific PPE requirements during current situations so as not to <i>overuse</i> PPE 28. Develop specific protocols for PPE distribution so as to ensure PPE is being used responsibly 29. Cohort patients with known disease to limit donning and doffing of PPE 30. Consider limiting visitors 31. Consider changes in staffing (i.e. unimmunized staff given assignments that would not require significant PPE use) 	<i>Conserve</i>			
Respirator Extended Use⁶ <ul style="list-style-type: none"> 32. Clarify current CDC and OSHA guidelines for respirator use; monitor for updates and recommendations.⁶ 33. Policies and recommendations around “extended use” or “re-use” of respirators should include input from occupational health, infection control, infectious disease specialists, state and local public health and any national recommendations around the situation at hand. 34. For N95, consider wearing a loose-fitting barrier that does not interfere with fit or seal (e.g., surgical mask, face shield) over the respirator to extend its use. 35. In general, wearing an N95 respirator over multiple serial patient encounters (while minimizing touching) is favored over removing and re-donning between encounters (i.e. extended use is favored over re-use of N95).³ 36. Cleaning and filter replacement procedures and extended use of filters and/or hoods/shields on all other mechanical respirators (i.e. elastomeric respirators, PAPRs, CAPRs etc.) should be done according to manufacturer’s protocols and guidelines. 	<i>Re-use</i>			
Re-use Respirator After Removal⁶ <ul style="list-style-type: none"> 37. Clarify current CDC and OSHA guidelines for respirator use; monitor for updates and recommendations.⁶ 38. Review manufacturer recommendations for cleaning and re-using PAPRs and CAPR face shields when appropriate. 39. Policies and recommendations around “extended use” or “re-use” of respirators should include input from occupational health, infection control, infectious disease specialists, state and local public health and any national recommendations around the situation at hand. 	<i>Re-use Re-allocate</i>			
<ul style="list-style-type: none"> 40. Use and store used respirators (hood, mask, shield) individually in such a way that the physical integrity and efficacy of the respirator will not be compromised.⁶ 41. Label respirator with a user’s name before use to prevent inadvertent use by another individual.⁶ 42. Practice appropriate hand hygiene before and after removal of the respirator and, if necessary and possible, appropriately disinfect the object used to store it.⁶ 43. Respirators should be discarded if visibly damaged or contaminated.⁶ 44. The specific number of safe reuses for N95’s is very difficult to estimate. In general check the specific N95 manufacturer recommendations. In general Five (5) is the recommended number of donning of a re-used N95-type respirator.⁶ 45. Consider N95 decontamination with ultraviolet germicidal irradiation (UVGI), or other tested method of decontamination to extend the use of respirators.⁴ Re-allocate/ prioritize <ul style="list-style-type: none"> 46. Respirators use should be prioritized only to those healthcare providers identified as highest risk based on epidemiology of current situation. 47. Identify medical personnel and caregivers with documented vaccination, immunity after an illness or lower risk of complicated infection to provide direct patient contact without a respirator. 	<i>Re-use Re-allocate</i>			

¹Refers to any device such as N95, elastomeric respirators, Powered Air Purifying respirators (PAPRs), Controlled Air Purifying Respirator (CAPRs) or equivalent. NIOSH approved particulate respirators can be found at: https://www.cdc.gov/niosh/npptl/topics/respirators/disp_part/RespSource.html; https://www.cdc.gov/niosh/npptl/topics/respirators/disp_part/default.html

²CDC and NIOSH overview of respirators: <https://www.cdc.gov/niosh/topics/respirators/default.html>

³OSHA eTool: <https://www.osha.gov/SLTC/etools/respiratory/index.html>

⁴“Extended use” is defined as wearing the same respirator for repeated close contact encounters with multiple patients without removing the respirator between patients (e.g. triage area, dedicated waiting rooms or wards, etc). “Reuse” is defined as using the same respirator for multiple encounters but removing it after each encounter. <https://www.cdc.gov/niosh/topics/hcwcontrols/recommendedguidanceextuse.html>
https://www.cdc.gov/niosh/npptl/topics/respirators/disp_part/respsource3respreuse.html

⁴Current research on the decontamination of N95 Respirators: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4699414/pdf/nihms747549.pdf>, <https://academic.oup.com/annweh/article/53/8/815/154763>
<https://academic.oup.com/annweh/article/56/1/92/166111>

⁵ https://www.cdc.gov/niosh/npptl/topics/respirators/disp_part/default.html

⁶<https://www.cdc.gov/niosh/topics/hcwcontrols/recommendedguidanceextuse.html>

FINAL APPROVED: 2/2020

Next Revision due: 2023

STAFFING

STRATEGIES FOR SCARCE RESOURCE SITUATIONS



Conventional Capacity – The spaces, staff, and supplies used are consistent with daily practices within the institution. These spaces and practices are used during a major mass casualty incident that triggers activation of the facility emergency operations plan.	Contingency Capacity – The spaces, staff, and supplies used are not consistent with daily practices, but provide care to a standard that is functionally equivalent to usual patient care practices. These spaces or practices may be used temporarily during a major mass casualty incident or on a more sustained basis during a disaster (when the demands of the incident exceed community resources)	Crisis Capacity – Adaptive spaces, staff, and supplies are not consistent with usual standards of care, but provide sufficiency of care in the setting of a catastrophic disaster (i.e., provide the best possible care to patients given the circumstances and resources available). Crisis capacity activation constitutes a significant adjustment to standards of care (Hick et al, 2009).			
RECOMMENDATIONS		Strategy	Conventional	Contingency	Crisis
Staff and Supply Planning <ul style="list-style-type: none"> Assure facility has process and supporting policies for disaster credentialing and privileging - including degree of supervision required, clinical scope of practice, mentoring and orientation, and verification of credentials. Encourage employee personal preparedness planning (ready.gov, redcross.org). Cache adequate personal protective equipment (PPE) and support supplies. Educate staff on facility disaster response and recommend regularly scheduled HICS training. Educate staff on community, regional and state disaster plans and resources. Develop facility plans addressing staff's family / pets or staff shelter needs (such as daycare and unaccompanied minor needs) as well as transportation plans for staff to get to and from the facility. Include a process of staff identification and verification. Recommend photos and hard-copy files. Create Job Cards for essential services and functions. Pre-identify critical positions and ensure redundant staffing for these. Recommend redundant staff communications and notification plans/procedures. 		Prepare			
Focus Staff Time on Core Clinical Duties <ul style="list-style-type: none"> Minimize meetings and relieve administrative responsibilities not related to event. Cohort inpatients per OSHA/Public Health or CDC guidelines. 		Conserve			
<ul style="list-style-type: none"> Reduce documentation requirements. 		Adapt			
Using Supplemental Staff <ul style="list-style-type: none"> Utilize administrative positions (e.g. nurse managers) as patient care extenders. Adjust personnel work schedules (longer but less frequent shifts, etc.) if this will not result in skill / PPE compliance deterioration. Voluntary call-back of staff Increase use of agency, per diem, travelers, float pools, locums staff Retain staff for extended hours (in accordance with labor contract and existing contracts/agreements when applicable) Use family members/lay volunteers to provide basic patient hygiene and feeding – releasing staff for other duties. Postpone and reschedule out-patient non-acute and preventative care appointments to open more acute care out-patient appointments during surge. 		Substitute			
Focus Staff Expertise on Core Clinical Needs <ul style="list-style-type: none"> Personnel with specific critical skills (ventilator, burn management) should concentrate on those skills; specify job duties that can be safely performed by other medical professionals. Reduce availability of non-time sensitive laboratory, radiographic, and other studies. Postpone and reschedule elective procedures if it will improve staffing and space needs and does not result in undue patient inconvenience 		Conserve			
<ul style="list-style-type: none"> Have specialty staff oversee larger numbers of differently specialized staff and patients (for example, medical/surgery nurses working in critical care are overseen by a critical care nurse). 		Substitute Conserve			
Use Alternative Personnel to Minimize Changes to Standards of Care <ul style="list-style-type: none"> Bring in equally trained staff (burn or critical care nurses, Disaster Medical Assistance Team [DMAT], other health system or Federal sources). Cancel all non-acute/preventative care appointments, surgeries and procedures (e.g. endoscopies, etc.) and divert staff to emergency duties including in-hospital or assisting public health at external clinics/screening/dispensing sites. 		Adapt			

<ul style="list-style-type: none">• Use less trained personnel from outside institution with appropriate mentoring and just-in-time education (e.g., healthcare trainees or other health care workers, Medical Reserve Corps, retirees).• Implement alternate consultation and care techniques such as telemedicine.• Provide just-in-time training for specific skills.				
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Adapted From the Minnesota Department of Health, Office of Emergency Preparedness

Updated: March 21, 2019

ADULT Critical Care Triage Algorithm

Crisis Standards of Care

Updated Version: Mar 2020



This Algorithm is intended to be used alongside the attached Worksheet.
Answering each question requires the supplemental information in the Worksheet.
Please use them together

Assumptions for use:

1. Health Officer has declared a crisis situation requiring scarce resource management and crisis standards of care, where crisis standards of care is defined as *“a substantial change in usual healthcare operations and the level of care it is possible to deliver which is made necessary by a pervasive or catastrophic disaster”*.¹
2. Healthcare systems are overwhelmed despite maximizing all possible surge and mitigation strategies impacting the space and/or staff and/or supplies needed to deliver usual levels of care.

Washington State has adopted and will use the ethical framework developed by the National Academy of Medicine, which stresses the importance of an ethically grounded system to guide decision-making in a crisis standards of care situation. All decisions and communications will be based on the ethical principles below. The National Academy of Medicine defines these ethical principles as:

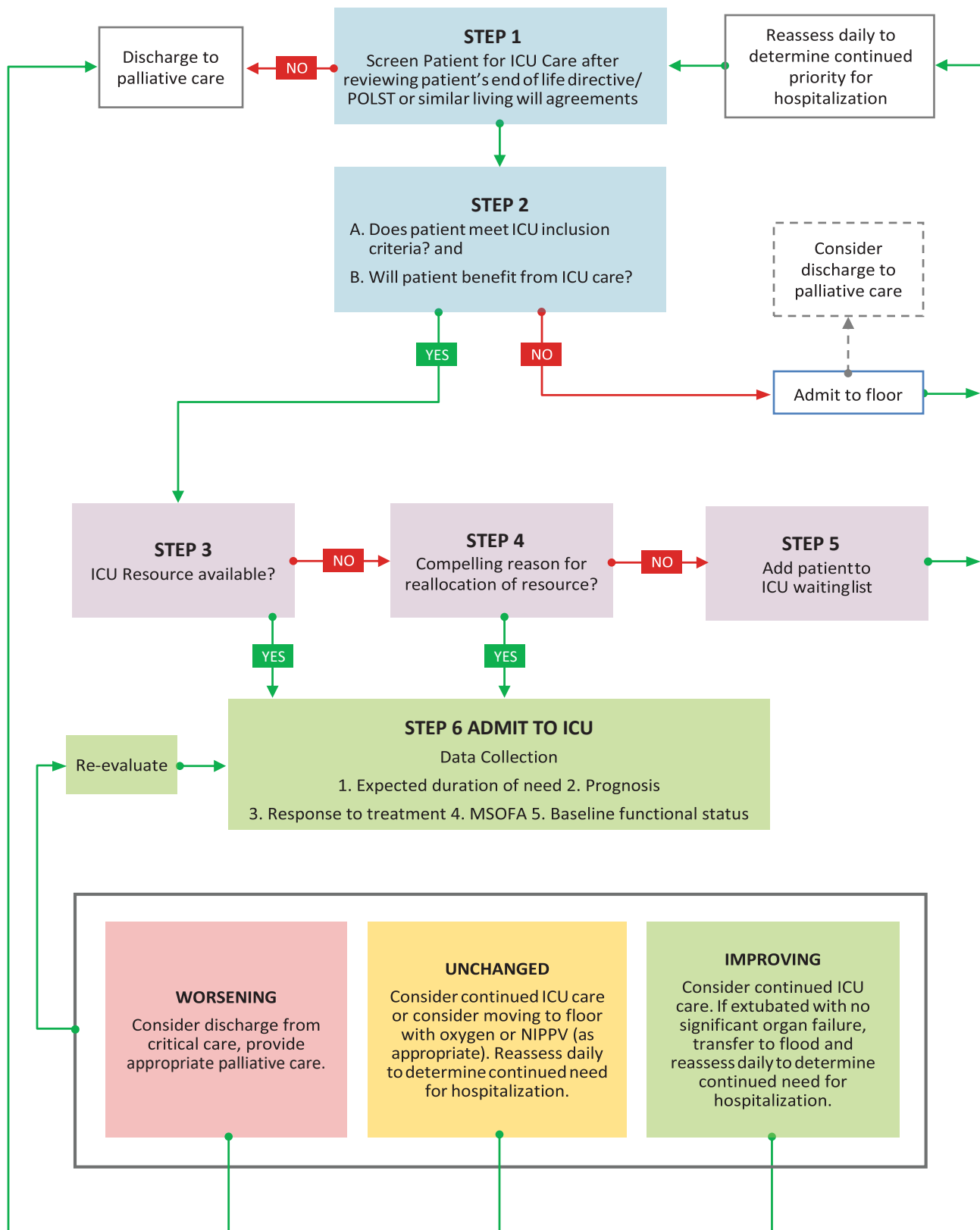
- **Fairness** – Standards that are, to the highest degree possible, recognized as fair by those affected by them – including the members of affected communities, practitioners, and provider organizations, evidence based and responsive to specific needs of individuals and the population.
- **Duty to care** – Standards are focused on the duty of healthcare professionals to care for patients in need of medical care.
- **Duty to steward resources** – healthcare institutions and public health officials have a duty to steward scarce resources, reflecting the utilitarian goal of saving the greatest possible number of lives.
- **Transparency** – in design decision making, and information sharing.
- **Consistency** – in application across populations and among individuals regardless of their human condition (e.g. race, age disability, ethnicity, ability to pay, socioeconomic status, preexisting health conditions, social worth, perceived obstacles to treatment, past use of resources).
- **Proportionality** – public and individual requirements must be commensurate with the scale of the emergency and degree of scarce resources.
- **Accountability** – of individual decisions and implementation standards, and of governments for ensuring appropriate protections and just allocation of available resources.²

1. IOM (Institute of Medicine) 2009. Guidance for Establishing Crisis Standards of Care for Use in Disaster Situations: A Letter Report. Washington, DC: National Academies Press.

ADULT Critical Care Triage Algorithm

Crisis Standards of Care

Updated Version: Mar 2020



This Worksheet, along with the corresponding Adult Critical Care Algorithm, are to be used by “Triage Teams” during a declared emergency event whereby an appropriate healthcare official has implemented crisis standards of care. It is recommended that a “Triage Team” be comprised of senior medical personnel, preferably not those primarily taking care of the individual patient under consideration. Please see “Scarce Resource Triage Team Guidelines” for further information.

STEP 1: Screen adult patients for ICU care during scarce resources

Proceed to following after reviewing patient’s end of life directives/POLST or similar living will documents. For the following conditions consider available staffing and resources. If resources are inadequate, **consider** transferring the following patients to out-patient or palliative care with appropriate resources and support as can be provided.

- ☐ 1. Pre-existing or Persistent coma or vegetative state
- ☐ 2. Severe acute trauma (e.g. non-survivable head injury)
- ☐ 3. Severe burns with Low Survival burn scores based on the Triage Decision for Burn Victims table (See Table A below). See Burn Scarce Resource Card for management of critical burn patient outside of a Burn Center.
- ☐ 4. Significant underlying disease process that predict poor short term survival*
**Examples of underlying diseases that predict poor short-term survival, despite standard treatment, include but are not limited to:*
 - Severe congestive heart failure
 - Severe chronic lung disease
 - Central nervous system, solid organ or hematopoietic malignancy with poor prognosis for recovery
 - Severe cirrhotic liver disease with multi-organ dysfunction
- ☐ 5. Baseline functional status (consider loss of reserves in energy, physical ability, cognition and general health)

STEP 2: Determine if patient meets ICU Inclusion Criteria

2A: Patients must have at least one of the following INCLUSION CRITERIA:

1. Requires ventilatory support, either invasive or non-invasive
 - Clinical evidence of impending respiratory failure
 - Refractory hypoxemia ($SpO_2 < 90\%$ on $FiO_2 > 0.85$)
 - Respiratory acidosis ($pH < 7.2$)
 - Inability to protect or maintain airway
2. Hypotension ($SBP < 90$) secondary to either an acute medical or trauma condition, with clinical evidence of shock (altered level of consciousness, decreased urine output, or other evidence of end stage organ failure) refractory to volume resuscitation that cannot be managed in a non-ICU setting.

2B: To determine critical care resource allocation the following should be considered:

- Expected duration of need of critical care resource
- Prognosis with consideration to both current epidemiology and underlying illness*
- Response to current treatment
- Degree of Organ Dysfunction as measured by the MSOFA (Modified Sequential Organ Failure Assessment Score) – Please see Step 6 regarding use of scoring system
- Baseline functional status (consider loss of reserves in energy, physical ability, cognition and general health)

**Examples of underlying diseases that predict poor short-term survival, despite standard treatment, include but are not limited to:*

- Severe congestive heart failure
- Severe chronic lung disease
- Central nervous system, solid organ or hematopoietic malignancy with poor prognosis for recovery
- Severe cirrhotic liver disease with multi-organ dysfunction

STEP 4: Assess for re-allocation of Critical Care Resource

To determine critical care resource allocation the following should be considered:

- Expected duration of need of critical care resource
- Prognosis with consideration to both current epidemiology and underlying illness*
- Response to current treatment
- Degree of Organ Dysfunction as measured by the MSOFA (Modified Sequential Organ Failure Assessment Score) – Please see Step 6 regarding use of scoring systems
- Baseline functional status (consider loss of reserves in energy, physical ability, cognition and general health)

**Examples of underlying diseases that predict poor short-term survival, despite standard treatment, include but are not limited to:*

- Severe congestive heart failure
- Severe chronic lung disease
- Central nervous system, solid organ or hematopoietic malignancy with poor prognosis for recovery
- Severe cirrhotic liver disease with multi-organ dysfunction

STEP 5: Critical care waiting list

If a patient meets ICU inclusion criteria and resources are not available, patient will be placed on an ICU waiting list. As resources become available their clinical situation will be re-assessed and they will be re-triaged based on criteria outlined in Step 6. If a clear distinction cannot be made between patients of similar triage priority, the resource will be allocated to the patient who has been waiting the longest.

STEP 6: Admit to ICU

Patient data collection outlined on Step 6 of the Algorithm will be continuous and ongoing. It is recommended that every 24 hours of a patient's ICU stay, their clinical condition will be reviewed and they will be determined to be "Improving", "Unchanged" or "Worsening". This determination must not only take into account data points as outlined in Step 6 but must also include updated epidemiology, critical care resource availability and census demands.

Previously, recommendations had been made to use MSOFA score alone to determine triage categories. However, based on more recent data^{2,3} it is current consensus that a specific SOFA or MSOFA score cannot accurately define clinical categories alone, and therefore all criteria outlined in Step 6 including current epidemiology must be taken into account when deciding if patients are "Improving," "Unchanged," or "Worsening".

Other Adult Considerations

All patients receiving critical care **before the onset** of crisis standards will be re-assessed based on the same criteria as all incoming critical care patients. The same Data as outlined in Step 6 should be obtained and resources re-allocated if needed dependent on the Triage Team assessment and decisions.

The use of ECMO should be decided on an individual basis by the ICU attending, nursing supervisor and ECMO representative based on prognosis, suspected duration of ECMO, availability of staff and other resources.

-
1. Crisis Capacity: Adaptive spaces, staff and supplies are not consistent with usual standards of care, but provide sufficiency of care in the setting of a catastrophic disaster (i.e. provide the best possible care to patients given the circumstances and resources available). Crisis capacity activation constitutes a significant adjustment to standards of care. (Hick et al, 2009, IOM)
 2. Grissom, Colin K, Disaster Med Public Health Preparedness 4(4):277-284, 2011
 3. Shahpori, R; Crit Care Med 39(4):827-832, 2011

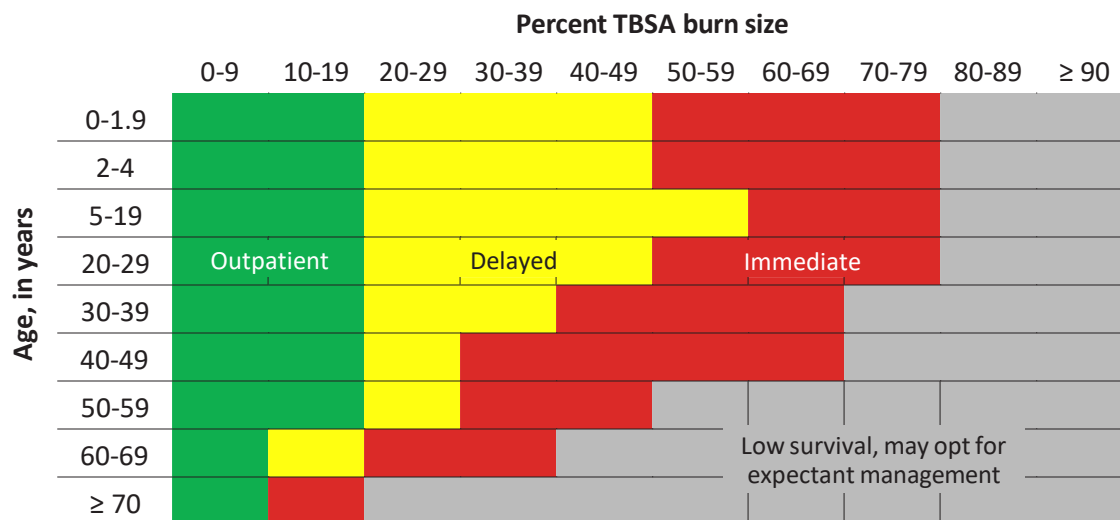


Table A

Saffle, JR, et al. Defining the ratio of outcomes to resources for triage of burn patients in mass casualties. J burn Care Rehabil 2005 26(6):478

Pediatric Critical Care Triage Algorithm

Crisis Standards of Care

Updated Version: Mar 2020



**This Algorithm is intended to be used alongside the attached Worksheet.
Answering each question requires the supplemental information in the Worksheet.
Please use them together.**

Assumptions for use:

1. Health Officer has declared a crisis situation requiring scarce resource management and crisis standards of care, where crisis standards of care is defined as *“a substantial change in usual healthcare operations and the level of care it is possible to deliver which is made necessary by a pervasive or catastrophic disaster”*.¹
2. Healthcare systems are overwhelmed despite maximizing all possible surge and mitigation strategies impacting the space and/or staff and/or supplies needed to deliver usual levels of care.

Washington State has adopted and will use the ethical framework developed by the National Academy of Medicine, which stresses the importance of an ethically grounded system to guide decision-making in a crisis standards of care situation. All decisions and communications will be based on the ethical principles below. The National Academy of Medicine defines these ethical principles as:

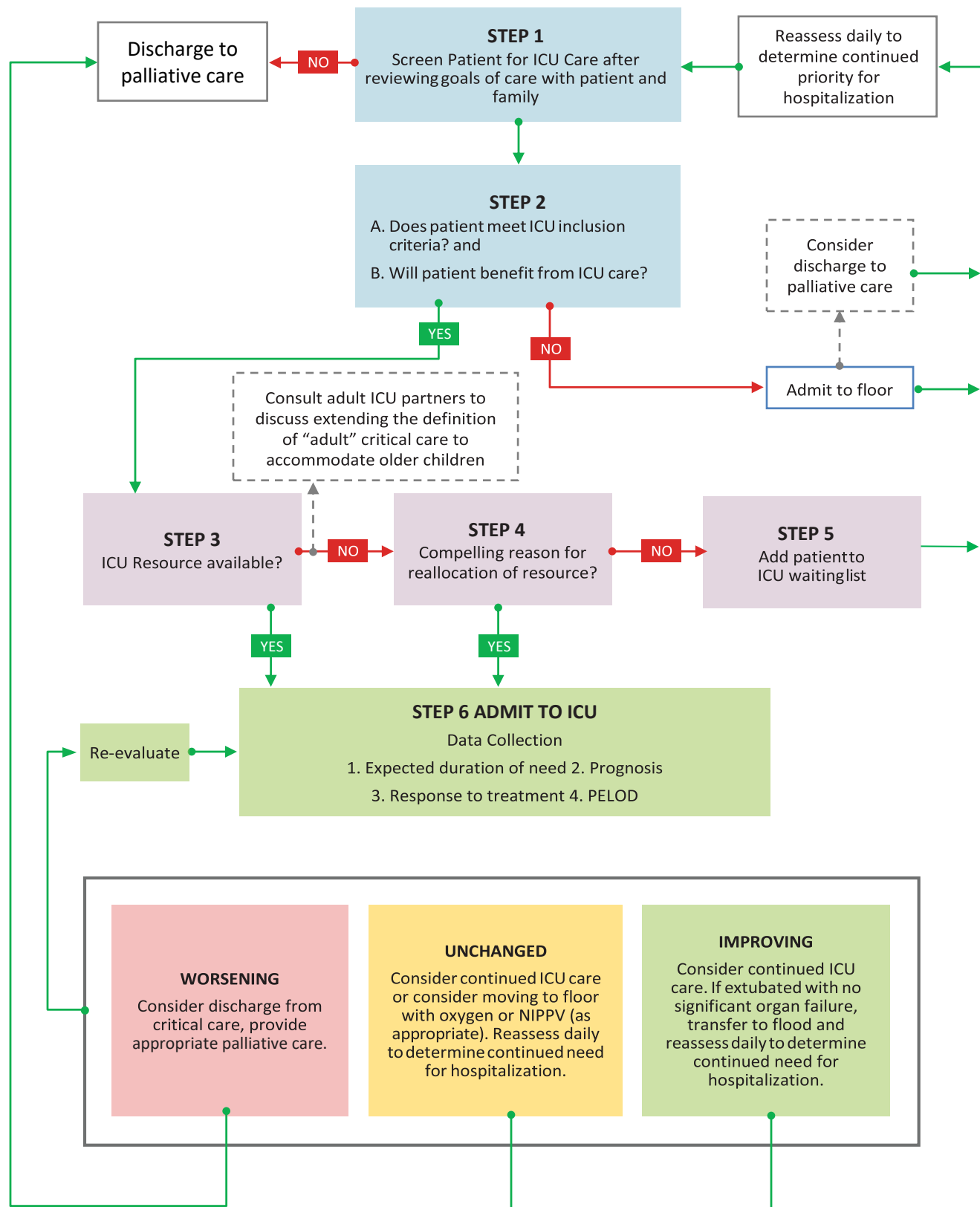
- **Fairness** – Standards that are, to the highest degree possible, recognized as fair by those affected by them – including the members of affected communities, practitioners, and provider organizations, evidence based and responsive to specific needs of individuals and the population.
- **Duty to care** – Standards are focused on the duty of healthcare professionals to care for patients in need of medical care.
- **Duty to steward resources** – healthcare institutions and public health officials have a duty to steward scarce resources, reflecting the utilitarian goal of saving the greatest possible number of lives.
- **Transparency** – in design decision making, and information sharing.
- **Consistency** – in application across populations and among individuals regardless of their human condition (e.g. race, age disability, ethnicity, ability to pay, socioeconomic status, preexisting health conditions, social worth, perceived obstacles to treatment, past use of resources).
- **Proportionality** – public and individual requirements must be commensurate with the scale of the emergency and degree of scarce resources.
- **Accountability** – of individual decisions and implementation standards, and of governments for ensuring appropriate protections and just allocation of available resources.²

1,2 IOM (Institute of Medicine) 2009. Guidance for Establishing Crisis Standards of Care for Use in Disaster Situations: A Letter Report. Washington, DC: National Academies Press.

Pediatric Critical Care Triage Algorithm

Crisis Standards of Care

Updated Version: Mar 2020



This Worksheet, along with the corresponding Pediatric Critical Care Algorithm, are to be used by “Triage Teams” during a declared emergency event whereby an appropriate healthcare official has implemented crisis standards of care. It is recommended that a “Triage Team” be comprised of senior medical personnel, preferably not those primarily taking care of the individual patient under consideration. Please see “Scarce Resource Triage Team Guidelines” for further information.

STEP 1: Screen Pediatric Patients for ICU care During Scarce Resources

Proceed to the following after reviewing goals of care with patient and family (e.g. limited code status). The goals of care should reflect the best interest of the patient.

For the following conditions consider available staffing and resources. If resources are inadequate, consider transferring the following patients to out-patient or palliative care with appropriate resources and support as can be provided.

- ☐ 1. Pre-existing or Persistent encephalopathy, coma or vegetative state
- ☐ 2. Severe acute trauma (e.g. non-survivable head injury)
- ☐ 3. Severe burns with Low Survival burn scores based on the Triage Decision for Burn Victims table (See Table A). See Burn Scarce Resource Card for management of critical burn patient outside of a Burn Center.
- ☐ 4. Significant underlying disease process that predict poor short term survival*

**Examples of underlying diseases that predict poor short-term survival, despite standard treatment, include but are not limited to:*

- Known severe chromosomal abnormalities with poor prognosis
- Known severe metabolic, neuromuscular, cardiac, oncologic or pulmonary disease with poor prognosis
- Extreme prematurity at the limits of viability

STEP 2: Determine if patient meets ICU Inclusion Criteria

2A: Patients must have at least one of the following INCLUSION CRITERIA:

- ☐ 1. Requires ventilatory support, either invasive or non-invasive
 - ☐ Clinical evidence of impending respiratory failure
 - Refractory hypoxemia ($SpO_2 < 90\%$ on $FIO_2 > 0.85$)
 - Respiratory acidosis ($pH < 7.2$)
 - ☐ Inability to protect or maintain airway
- ☐ 2. Hypotension (see table A) or clinical evidence of shock (defined as an altered level of consciousness, decreased urine output, or other evidence of end stage organ failure) refractory to volume resuscitation secondary to either an acute medical or trauma condition that cannot be managed in a non-ICU setting.

Age	SBP (mmHG)
0-28 days	<60
1 month – 1 year	<70
1 year – 10 years	(age in years x 2) + 70
>10 years	<90

Table A²

2B: To determine critical care resource allocation the following should be considered:

- Expected duration of need of critical care resource
- Prognosis with consideration to both current epidemiology and underlying illness*
- Response to current treatment
- Degree of Organ Dysfunction as measured by the Pediatric Logistic Organ Dysfunction (PELOD 2) score. **(Table C) – Please see Step 6 regarding use of scoring systems.**

**Examples of underlying diseases that predict poor short-term survival, despite standard treatment, include but are not limited to:*

- Known severe chromosomal abnormalities with poor prognosis
- Known severe metabolic, neuromuscular, cardiac, oncologic or pulmonary disease with poor prognosis
- Extreme prematurity at the limits of viability

STEP 4: Assess for re-allocation of Critical Care Resource

To determine critical care resource allocation the following should be considered:

- Expected duration of need of critical care resource
- Prognosis with consideration to both current epidemiology and underlying illness*
- Response to current treatment
- Degree of Organ Dysfunction as measured by the Pediatric Logistic Organ Dysfunction (PELOD 2) score. **(Table C) – Please see Step 6 regarding use of scoring systems.**

**Examples of underlying diseases that predict poor short-term survival, despite standard treatment, include but are not limited to:*

- Known severe chromosomal abnormalities with poor prognosis
- Known severe metabolic, neuromuscular, cardiac, oncologic or pulmonary disease with poor prognosis
- Extreme prematurity at the limits of viability

STEP 5: Critical care waiting list

If a patient meets ICU inclusion criteria and resources are not available, patient will be placed on an ICU waiting list. As resources become available their clinical situation will be re-assessed and they will be re-triaged based on criteria outlined in Step 6. If a clear distinction cannot be made between patients of similar triage priority, the resource will be allocated to the patient who has been waiting the longest.

STEP 6: Admit to ICU

Patient data collection outlined on Step 6 of the Algorithm will be continuous and ongoing. It is recommended that every 24 hours of a patient's ICU stay, their clinical condition will be reviewed and they will be determined to be "Improving", "Unchanged" or "Worsening". This determination must not only take into account data points as outlined in Step 6 but must also include updated epidemiology, critical care resource availability and census demands.

Pediatric prognostic scoring systems currently available (e.g. PELOD2) are unable to accurately predict patient outcomes and thus should not be used as a sole indicator of prognosis especially in a disaster situation. When considering critical care resource allocation in a crisis, it is recommended that decisions be made by a Triage Team. Decisions should be made based on best clinical judgment with full knowledge of regional resource availability. (Ped Crit Care 2011)

Other Pediatric Considerations

All patients receiving critical care **before the onset** of crisis standards will be re-assessed based on the same criteria as all incoming critical care patients. The same Data as outlined in Step 2 should be obtained and resources re-allocated if needed dependent on the Triage Team assessment and decisions.

The use of ECMO should be decided on an individual basis by the PICU and/or NICU attending, nursing supervisor and ECMO representative based on prognosis, suspected duration of ECMO, availability of staff and other resources.

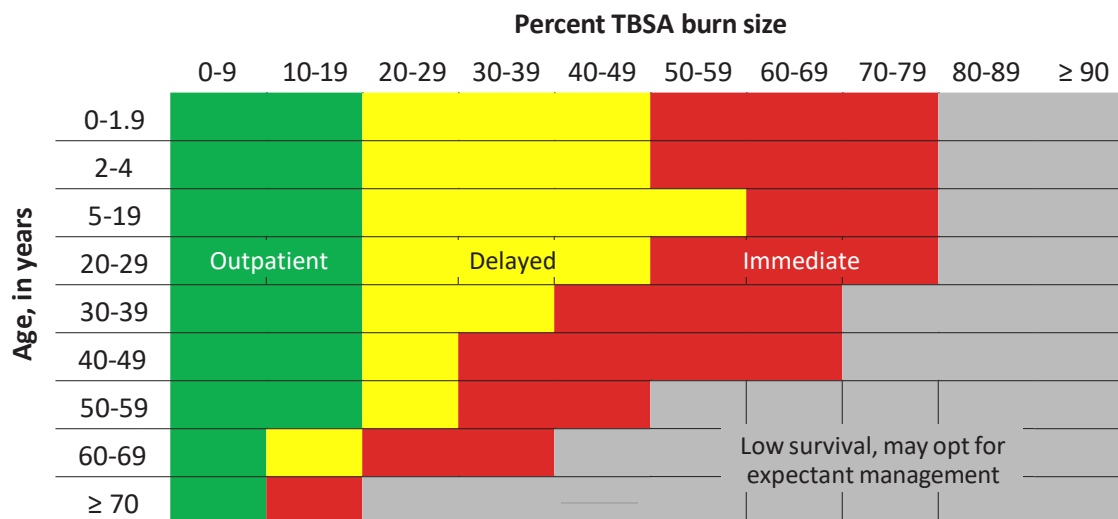


Table B

Saffle, JR, et al. Defining the ratio of outcomes to resources for triage of burn patients in mass casualties. J burn Care Rehabil 2005 26(6):478

Table C. PELOD2 Scoring System³

Organ Dysfunctions and Variables ^a	Points by Severity Levels						
	0	1	2	3	4	5	6
Neurologic^b							
Glasgow Coma Score	≥ 11	5–10			3–4		
Pupillary reaction	Both reactive					Both fixed	
Cardiovascular^c							
Lactatemia (mmol/L)	< 5.0	5.0–10.9			≥ 11.0		
Mean arterial pressure (mm Hg)							
0 to < 1 mo	≥ 46		31–45	17–30			≤ 16
1–11 mo	≥ 55		39–54	25–38			≤ 24
12–23 mo	≥ 60		44–59	31–43			≤ 30
24–59 mo	≥ 62		46–61	32–44			≤ 31
60–143 mo	≥ 65		49–64	36–48			≤ 35
≥ 144 mo	≥ 67		52–66	38–51			≤ 37
Renal							
Creatinine (μmol/L)							
0 to < 1 mo	≤ 69		≥ 70				
1–11 mo	≤ 22		≥ 23				
12–23 mo	≤ 34		≥ 35				
24–59 mo	≤ 50		≥ 51				
60–143 mo	≤ 58		≥ 59				
≥ 144 mo	≤ 92		≥ 93				
Respiratory^d							
Pao ₂ (mm Hg)/Fio ₂	≥ 61		≤ 60				
Paco ₂ (mm Hg)	≤ 58	59–94		≥ 95			
Invasive ventilation	No			Yes			
Hematologic							
WBC count (× 10 ⁹ /L)	> 2		≤ 2				
Platelets (× 10 ⁹ /L)	≥ 142	77–141	≤ 76				
^a All variables must be collected, but measurements can be done only if justified by the patient's clinical status. If a variable is not measured, it should be considered normal. If a variable is measured more than once in 24 hr, the worst value is used in calculating the score. Fio ₂ : fraction of inspired oxygen. ^b Neurologic dysfunction: Glasgow Coma Score: use the lowest value. If the patient is sedated, record the estimated Glasgow Coma Score before sedation. Assess only patients with known or suspected acute central nervous system disease. Pupillary reactions: nonreactive pupils must be > 3 mm. Do not assess after iatrogenic pupillary dilatation. ^c Cardiovascular dysfunction: Heart rate and mean arterial pressure: do not assess during crying or iatrogenic agitation. ^d Respiratory dysfunction: Pao ₂ : use arterial measurement only. Pao ₂ /Fio ₂ ratio is considered normal in children with cyanotic heart disease. Paco ₂ can be measured from arterial, capillary, or venous samples. Invasive ventilation: the use of mask ventilation is not considered invasive ventilation. Logit (mortality) = -6.61 + 0.47 × PELOD-2 score. Probability of death = 1/(1 + exp [-logit(mortality)]).							

CRITICAL CARE MEDICINE

1. Crisis Capacity: Adaptive spaces, staff and supplies are not consistent with usual standards of care, but provide sufficiency of care in the setting of a catastrophic disaster (i.e. provide the best possible care to patients given the circumstances and resources available). Crisis capacity activation constitutes a significant adjustment to standards of care. (Hick et al, 2009)
2. ECC Guidelines 2010, Circulation 2010;122 Suppl3:S876-S908
3. Leteurtre, Stéphane; Duhamel, Alain; Salleron, Julia; Grandbastien, Bruno; Lacroix, Jacques; Leclerc, Francis; on behalf of the Groupe Francophone de Réanimation et d'Urgences Pédiatriques (GFRUP); Critical Care Medicine41(7):1761-1773, July 2013. doi: 10.1097/CCM.0b013e31828a2bbd

Scarce Resource Triage Team Guidelines

To be used in conjunction with Scarce Resource Algorithms during Crisis Standards of Care

Updated: Mar 2020

Introduction

In the event of a large scale disaster—either a no notice event such as a natural disaster or a prolonged situation such as a pandemic—there is the potential for an overwhelming number of critically ill or injured patients. In these situations, certain medical resources may become scarce and prioritization of care may need to be considered.

In 2009 the Institute of Medicine (currently the National Academy of Medicine) published a landmark report, *Guidance for Establishing Crisis Standards of Care for use in Disaster Situation: A Letter Report*. In this report the authors defined surge capacity as a continuum from conventional to contingency and finally crisis. This framework has been nationally accepted and adopted. The definition of “Crisis Capacity” as set by the NAM, is a situation where space, staff and supplies “are not consistent with usual standards of care, but provide sufficiency of care in the context of a catastrophic disaster (i.e., provide the best possible care to patients given the circumstances and resources available).”¹

The content of this document is based on a thorough review of the literature, guidelines published by leading national healthcare specialty colleges and societies, recommendations of the National Academy of Medicine and detailed discussion and deliberation by the WA State Disaster Medical Advisory Committee (DMAC), the Disaster Clinical Advisory Committee (DCAC) Central District and included input from both local and state Community Engagement Reports.^{2,3}

This document is to be used in conjunction with the DOH Scarce Resource Triage Algorithms which were developed by regional workgroups of Subject Matter Experts (SME), and approved by the Disaster Clinical Advisory Committee (DCAC) Central District. Implementation of these algorithms depends upon the development of individual Crisis Standards of Care Hospital, Hospital System, and Regional Triage Teams as outlined below.

Purpose

To provide a transparent, fair, equitable, and consistent approach to allocation of scarce resources during a declared emergency in which Crisis Standards of Care (CSC) has been implemented.

Scope

All healthcare organizations and providers within the affected region of the CSC declaration.

Assumptions

- A Health Officer has declared a crisis situation and crisis standards of care has been activated.
- Healthcare systems are overwhelmed despite maximizing all possible surge and mitigation strategies impacting the space and/or staff and/or supplies needed to deliver usual levels of care
- Federal assets have been requested but may be delayed.

1. IOM (Institute of Medicine) 2009. *Guidance for Establishing Crisis Standards of Care for Use in Disaster Situations: A Letter Report*. Washington, DC: National Academies Press.

2. Washington State Crisis Standards of Care Community Engagement Report, June 2019, WA DOH.

3. Li-Vollmer, M. Health Care Decisions in Disasters: Engaging the Public On Medical Service Prioritization During a Severe Influenza Pandemic. *Journal of Participatory Medicine*. Vol 2. December 14, 2010.

Implementation Recommendations

A. General

All healthcare organizations within the affected region agree to implement a uniform triage process as outlined in this document to be used along with the DOH Scarce Resource Triage Algorithms to include: Adult Critical Care, Pediatric Critical Care and Renal Replacement Therapy (pending) Algorithms.

B. CSC Triage Teams: Identification and Composition

1. CSC Hospital Clinical Triage Team

It is recommended that every in-patient healthcare institution have a CSC Hospital Clinical Triage Team which will report to the Medical Care Branch Director (or equivalent position within organization's command structure) during activation of HICS.

- a. It is recommended the CSC Hospital Clinical Triage Team
 - At least 2-3 senior clinicians with experience in tertiary triage (e.g. Critical Care, Emergency Medicine, Trauma Surgery, etc.), with one designated as Lead Triage Officer who oversees all Triage processes.
 - 1 medical ethicist
 - When possible clinicians on the Triage Team will not be primary providers of the patients under consideration
 - When patients requiring a scarce resource fall under a specific specialty such as burn, trauma, pediatrics, etc. then all attempts will be made to consult that specialty either in person or remotely during consideration
- b. All patients presented to the CSC Hospital Clinical Triage Team will be recorded in a CSC Hospital Clinical Triage Team Log, which will include:
 - Date and time of referral
 - Name of referring clinician and contact information
 - Patient identifiers: These should include only date of birth and sex. Patient's name and other demographic data should not be considered by the Triage Team. Hospital specific MRN should be notated to confirm patient identification but should not be made available to the Triage Team
 - All clinical information presented to the Triage Team at the time of decision
 - Triage Team decision, date and time of the decision, and all supporting documentation reviewed and produced for the decision
 - If patient is referred, date and time of referral and contact information of receiving Clinical Triage Team
 - Patient outcome (if known)
- c. If the patient requires referral outside an individual hospital and the hospital is part of a wider hospital system please see Section 2. If the hospital is not part of a larger hospital system then please refer to Section 3.
- d. It is recommended the CSC Hospital Clinical Triage Team follow the communication guidelines outlined in this document in order to maintain accurate and up to date situational awareness.

2. Hospital systems during CSC

It is recommended every Hospital System maintain good communications between individual hospitals in their system to assist in situational awareness for the scarce resource in question. It is recommended that every hospital system have a mechanism by which a critical resource can be maximized and distributed throughout their system and that all appropriate channels have been exhausted to obtain additional resources. When a specific healthcare facility within a hospital system lacks a specific resource, identifying that resource within their system should be the first step in patient placement. This would be managed by the CSC Hospital System Triage Team.

- a. All patients presented to the CSC Hospital System Triage Team will be recorded in a CSC Hospital System Triage Team Log, which will include:
 - Date and time of referral
 - Name of referring clinician and contact information
 - Patient identifiers: These should include only date of birth and sex. Patient's name and other demographic data should not be considered by the Triage Team. Hospital specific MRN should be notated to confirm patient identification but should not be made available to Triage Team.
 - All clinical information presented to the Triage Team at the time of decision
 - Triage Team decision, date and time of the decision, and all supporting documentation reviewed and produced for the decision
 - If patient is referred to the Regional Triage Team, date and time of referral and contact information of receiving Regional Triage Team
 - Patient outcome (if known)
- b. Those patients who cannot be managed within their system will need to be presented to the CSC Regional Clinical Triage Team for consideration and prioritization within a different hospital system.

3. CSC Regional Clinical Triage Team

It is recommended a CSC Regional Clinical Triage Team manage prioritization and placement of patients in need of a scarce resource in the affected geographic region who cannot be managed within a specific hospital system.

It is recommended the CSC Regional Clinical Triage Team fairly represent the healthcare facilities and systems within the region. If a region has developed a healthcare coalition DCAC then it is recommended that members of the CSC Regional Triage team be determined in coordination with local DCAC, State DMAC, LHO, other Public Health experts, outside SME's, etc. and can consist of members from the local DCAC, healthcare executives or the clinical community at large.

If a region does not have a local DCAC then CSC Regional Clinical Triage Team members will be determined by the State DMAC in coordination with the SHO, LHO, other Public Health experts, outside SME's, etc. and can consist of members from the DMAC, healthcare executives or the clinical community at large.

Recommended members of the CSC Regional Clinical Triage Team are as follows:

- Senior clinicians with experience in tertiary triage (e.g. Critical Care, Emergency Medicine, Trauma Surgery, etc.), with one designated as Lead Triage Officer who oversees all Triage processes.
 - 1 medical ethicist
 - When possible, clinicians on the CSC Regional Clinical Triage Team will not be primary providers of the patients under consideration, nor members of the referring CSC Hospital or Hospital System Clinical Triage Team(s).
 - When patients requiring a scarce resource fall under a specific specialty such as burn, trauma, pediatrics, etc. then all attempts will be made to consult that specialty either in person or remotely during consideration.
- a. All patients presented to the CSC Regional Clinical Triage Team will be recorded in a CSC Regional Clinical Triage Team Log which will include:
 - Date and time of referral
 - Name of referring clinician and contact information
 - Patient identifiers: These should include only date of birth and sex. Patient's name and other demographic data should not be considered by the Triage Team. Hospital specific MRN should be notated to confirm patient identification, but should not be made available to Triage Team.
 - All clinical information presented to the Triage Team at the time of decision Triage Team decision date and time and all supporting documentation
 - Patient outcome (if known)

- b. It is recommended the CSC Regional Clinical Triage Team follow the communication guidelines below in order to maintain accurate and up to date situational awareness.
- c. The CSC Regional Clinical Triage Team is under the same Oversight and Re-evaluation processes as the CSC Hospital and Hospital System Triage Teams outlined below.

C. Oversight

In order to maintain transparency and ensure a fair, equitable and consistent approach to allocation of a scarce resources it is important that all triage teams have an oversight process for decisions made during an event.

1. CSC Hospital and Hospital Systems Oversight Committee

When an event occurs which requires activation of the CSC Hospital or Hospital System Clinical Triage Team the following documentation will be required and should be maintained and reviewed by the CSC Oversight Committee designated by the Medical Operations Branch Director under HICS.

- a. It is recommended the CSC Triage Team Oversight Committee consist of the
 - Senior clinicians with experience in tertiary triage (e.g. Critical Care, Emergency Medicine, Trauma Surgery, etc.), with one designated as Chair who oversees all Oversight processes
 - When possible clinicians on the CSC Triage Team Oversight Committee will not be primary providers of the patients under consideration
 - When patients requiring a scarce resource fall under a specific specialty such as burn, trauma, pediatrics, etc. then all attempts will be made to consult that specialty either in person or remotely during consideration
 - At least one medical ethicist
- b. All patients presented to the CSC Hospital or Hospital System Triage Team will be reviewed by an CSC Oversight Committee and will be recorded in an CSC Oversight Triage Team Log, which will
 - All patient demographics
 - Date and time of the case consideration
 - All patient information presented to the Clinical Triage Team at the time of consideration
 - Triage Team decision, date and time of the decision, and all supporting documentation reviewed and produced for the decision
 - If patient was referred, date and time of referral and contact information of receiving Clinical Triage Team
 - Patient outcome
- c. It is recommended that at agreed upon intervals the CSC Oversight Committee will review all cases presented to the CSC Hospital or Hospital System Triage Team to ensure the following:
 - All appropriate clinical information was considered
 - Accurate documentation was recorded
 - Significant variances be reviewed and addressed
- d. Depending on the nature of the incident oversight review may be in real time (e.g. in a prolonged event such as a pandemic). However in no notice, sudden or brief events, this review may be retrospective.

2. CSC Regional Oversight Committee

When an event occurs which requires activation of the CSC Regional Clinical Triage Team the following documentation will be required and will be maintained and reviewed by the CSC Regional Oversight Committee. If a region has developed a healthcare coalition DCAC then it is recommended that members of the CSC Regional Oversight team be determined in coordination with local DCAC, State DMAC, LHO, other Public Health experts, outside SME's, etc. and can consist of members from the local DCAC, healthcare executives or the clinical community at large.

If a region does not have a local DCAC then the CSC Regional Oversight Team members will be determined by the State DMAC in coordination with the SHO, LHO, other Public Health experts, outside SME's, etc. and can consist of members from the DMAC (or their designees), healthcare executives or the clinical community at large. Recommended members of the CSC Regional Clinical Triage Team are as follows:

- Senior clinicians with experience in tertiary triage (e.g. Critical Care, Emergency Medicine, Trauma Surgery, etc.), with one designated as Chair who oversees all Oversight processes.
 - When possible clinicians on the Regional Triage Team Oversight Committee will not be primary providers of the patients under consideration nor members of the Regional Triage Team.
 - When patients requiring a scarce resource fall under a specific specialty such as burn, trauma, pediatrics, etc. then all attempts will be made to consult that specialty either in person or remotely during consideration.
 - At least one medical ethicist
- a. All patients presented to the CSC Regional Oversight Committee will be recorded in a CSC Regional Oversight Committee Log, which will include:
 - All patient demographics
 - Date and time of the case consideration
 - All patient information presented to the CSC Regional Clinical Triage Team at the time of consideration.
 - The CSC Regional Clinical Triage Team decision date, time and supporting documentation reviewed and produced for the decision
 - Patient outcome
 - b. It is recommended that at agreed upon intervals the CSC Regional Oversight Committee will review all cases presented to the Regional Triage Team to ensure the following:
 - All appropriate clinical information was considered
 - Accurate documentation was recorded
 - Extreme variances be reviewed and addressed
 - c. Depending on the nature of the incident oversight review may be in real time (i.e. in a prolonged event such as a pandemic). However in no notice, sudden or brief events, this review may be retrospective.

D. Re-evaluation Process During Response

1. Request to change process

- a. During an event individual clinicians may request a specific change to the Scarce Resource Cards, Triage Algorithms or protocols based on new clinical information such as changes in prognostic indicators or outcome measure. These requests should be made in writing to the Chair and Vice Chair of the WA State DMAC (or their designee).
- b. WA State DMAC will keep a log and record of every CSC Reevaluation Process Request, date and time of request, and all the supporting documentation presented during the request and evaluation.
 - Each request will be reviewed by the DMAC Chair and Vice Chair or their designee along with all relevant partners including additional input from SME's
 - All request decisions will be made in a timely fashion and will be based on consensus of all relevant partners
 - Final decisions for all CSC Reevaluation Process Requests will be in writing, dated and timed, and include all supporting documentation

2. Request to reevaluate specific case

- a. Any clinician may bring a CSC Request for Patient Reevaluation of a specific case to the respective Medical Care Branch Director and designated ethicist. The Medical Care Branch Director has authority over the respective CSC Clinical Triage Team who made the initial decision under consideration (i.e. individual CSC hospital, hospital system, or regional Clinical Triage Team).
 - At the individual hospital and hospital system, the Medical Branch Director will be determined by standards HICS designations within the organization
 - At the Regional level, the Medical Branch Director will be the Chair or Vice Chair of the State DMAC (or their designee)
 - At all levels, a CSC Request for Patient Reevaluation will be reviewed by the Medical Branch Director, a designated ethicist and any other relevant partners.
- b. A log will be maintained of every Request for Reevaluation, date and time of request, and all supporting documentation presented during the request and reevaluation.
- c. Every case brought to the Medical Care Branch Director and designated ethicist will be reviewed in a timely fashion to ensure the Triage Team documentation was complete and the decision process was consistent with Scarce Resource Cards, Triage algorithms, protocols or any other clinical documentation related to the case *that was available at the time the original decision was made*.
- d. Depending on the event (i.e. no notice vs prolonged) it is understood that this process may be retrospective. However, if the event is more prolonged and the potential outcomes of the patient may be affected, then processes should be in place to allow a sufficiently rapid decision.
- e. Final decisions for CSC Request for Patient Reevaluation of a specific case will be in writing, dated and timed, and include all supporting documentation.
- f. Decision made by the respective Medical Care Branch Director and designated ethicist will be final.

1 During response

It is understood that during an event, the clinical situation may change depending on resource availability, new epidemiologic information, new treatment protocols and guidelines, etc. *It will be the responsibility of the entire healthcare community* to maintain close communication with the Local and State Health Officer and all relevant partners to maintain accurate situational awareness and consensus regarding local triage recommendations.

2. During preparedness

All Scarce Resource Cards and algorithms and any supporting documentation will be reviewed and updated every 3 years.

3. Communications

- a. During response, NWHRN in conjunction with DMAC will be responsible for identifying all pertinent partners during an activation of the Scarce Resource Triage Team Guidelines to include but not limited to: LHO, SME's, DOH and Federal partners.
- b. Depending on the situation, clinical updates may be required at various frequencies, and will be determined by DMAC Chair and Vice Chair, SHO, LHO and all other pertinent partners. State Health officer (SHO) in conjunction with NWHRN will be responsible for disseminating this information in a timely fashion to all appropriate clinical entities.
- c. Communications will be electronically, but if circumstances are such that electronic communication is not possible, secondary communication processes will include FAX, phone and courier.